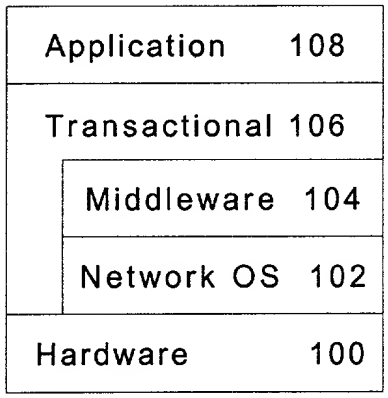


Figure 1A

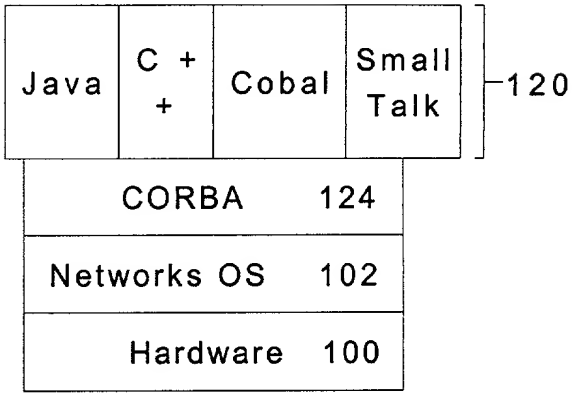


Figure 1C

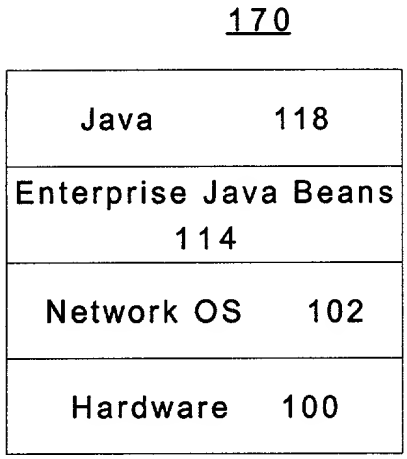


Figure 1B

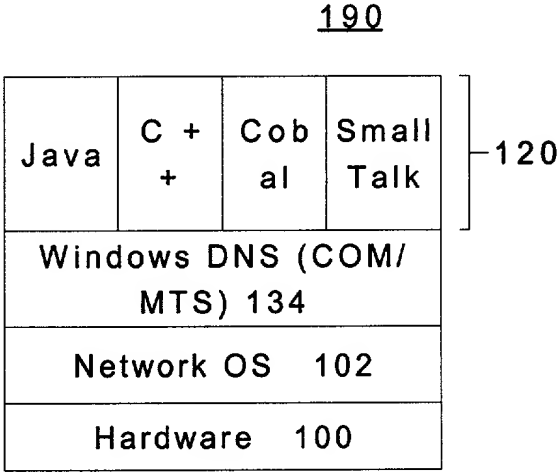


Figure 1D

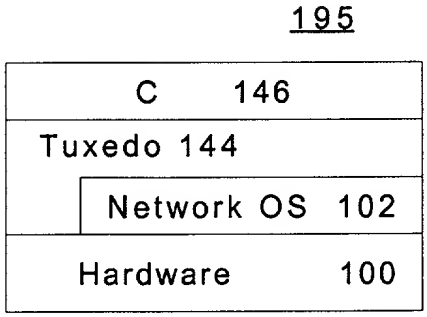
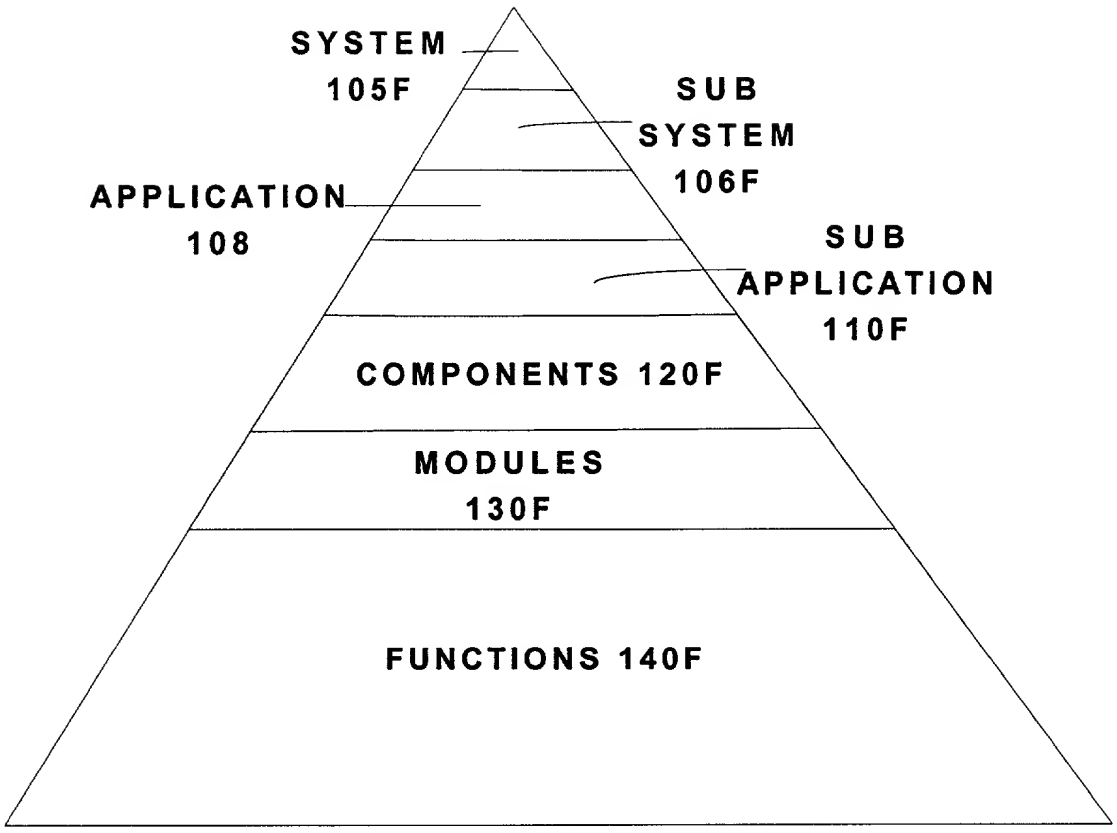


Figure 1E

100F



PRIOR ART

FIGURE 1F

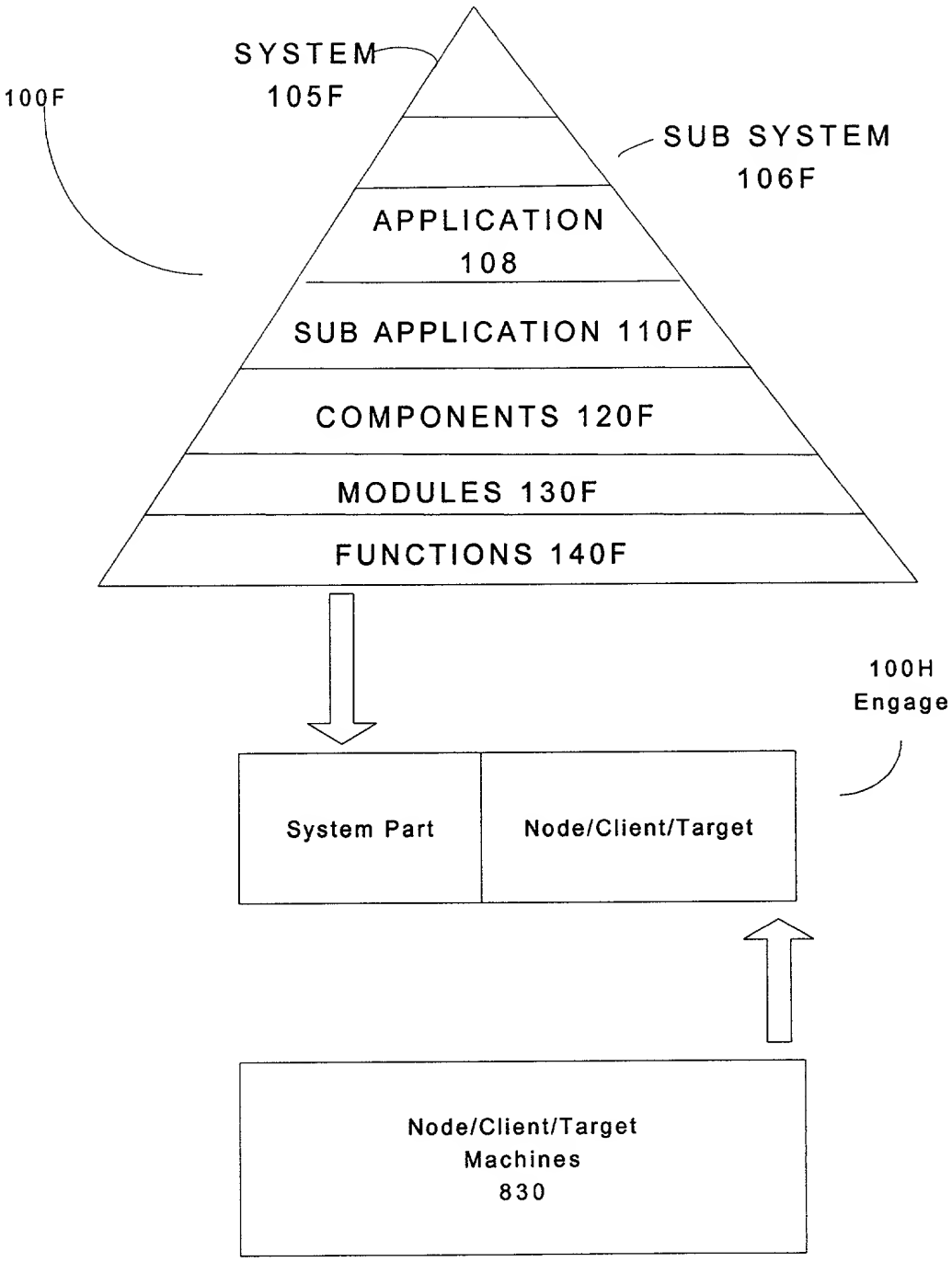

SYSTEM
105F
100F
SUB SYSTEM
106F
APPLICATION
108
SUB APPLICATION 110F
COMPONENTS 120F
MODULES 130F
FUNCTIONS 140F
100H
Engage
System Part
Node/Client/Target
Node/Client/Target
Machines
830

Figure 1G

100H

Part ID 120H	Target ID 130H

Engagement Pair 110H

.
.
.
.

Figure 1H

200

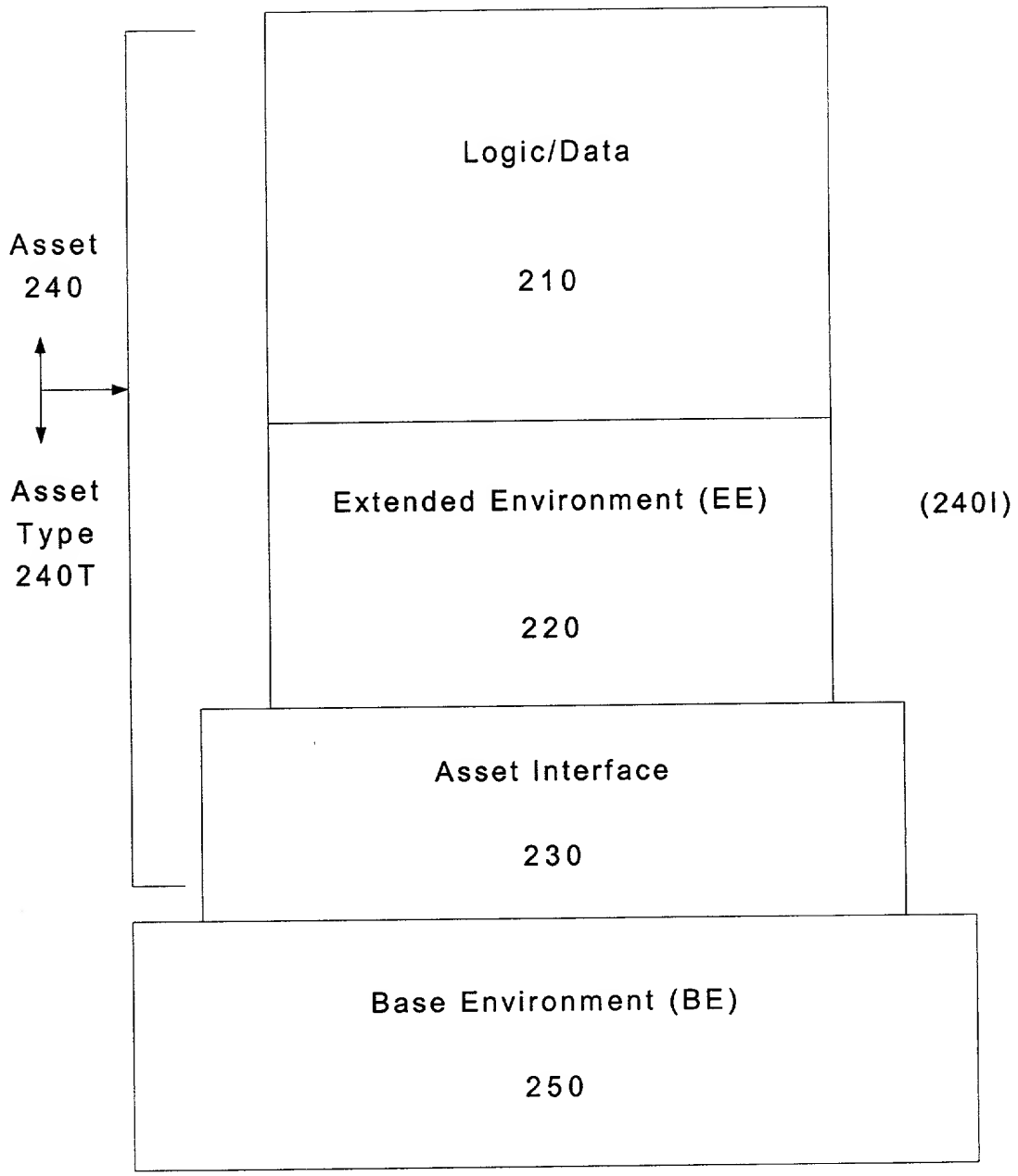

Logic/Data
210
Asset
240
Extended Environment (EE)
220
(240l)
Asset
Type
240T
Asset Interface
230
Base Environment (BE)
250

Figure 2

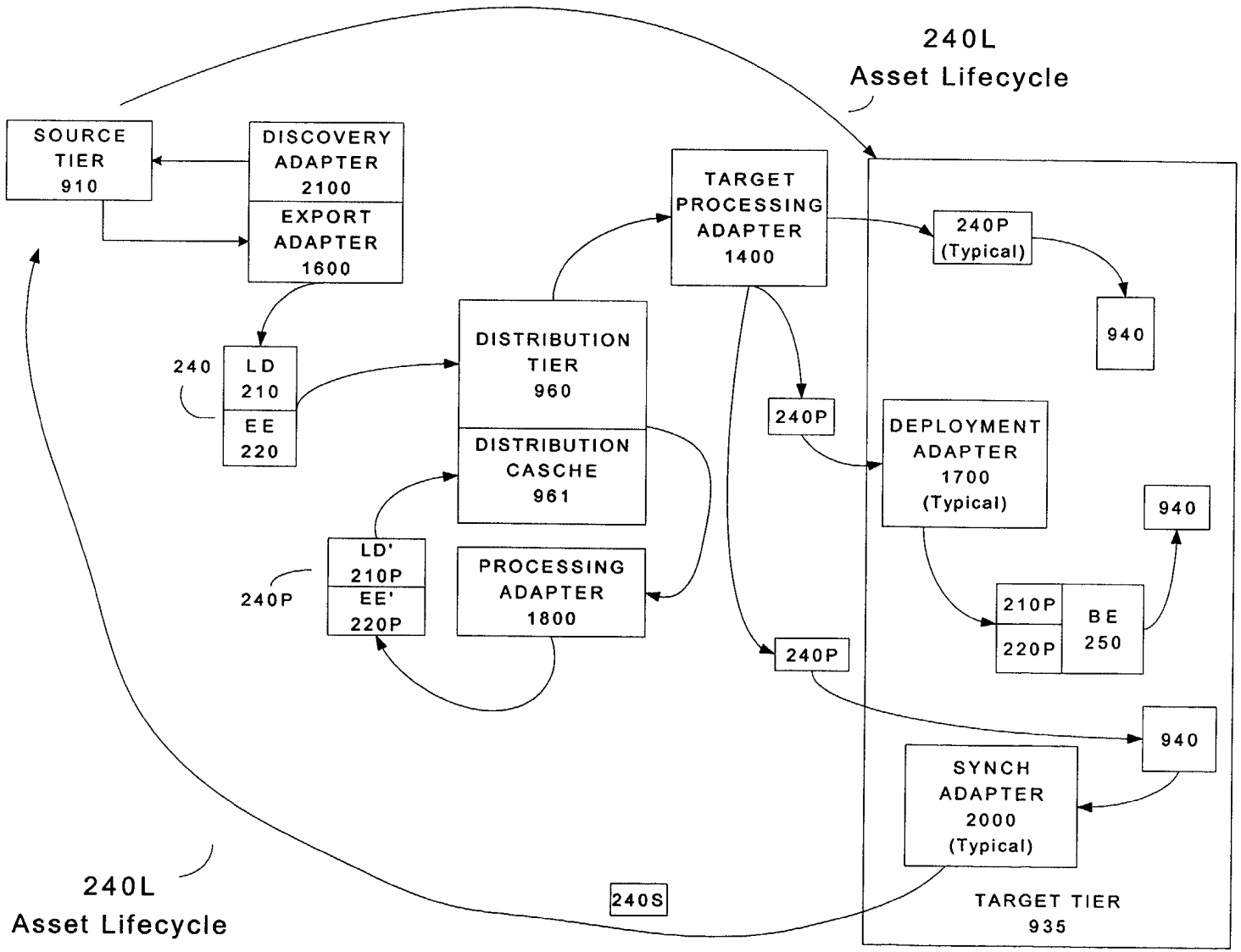

240L
Asset Lifecycle
SOURCE TIER 910
DISCOVERY ADAPTER 2100
EXPORT ADAPTER 1600
240
LD 210
EE 220
DISTRIBUTION TIER 960
DISTRIBUTION CASCHE 961
TARGET PROCESSING ADAPTER 1400
240P (Typical)
940
240P
DEPLOYMENT ADAPTER 1700 (Typical)
940
LD' 210P
EE' 220P
240P
PROCESSING ADAPTER 1800
210P
220P
BE 250
240P
940
SYNCH ADAPTER 2000 (Typical)
240L
Asset Lifecycle
240S
TARGET TIER 935

FIGURE 2A

220

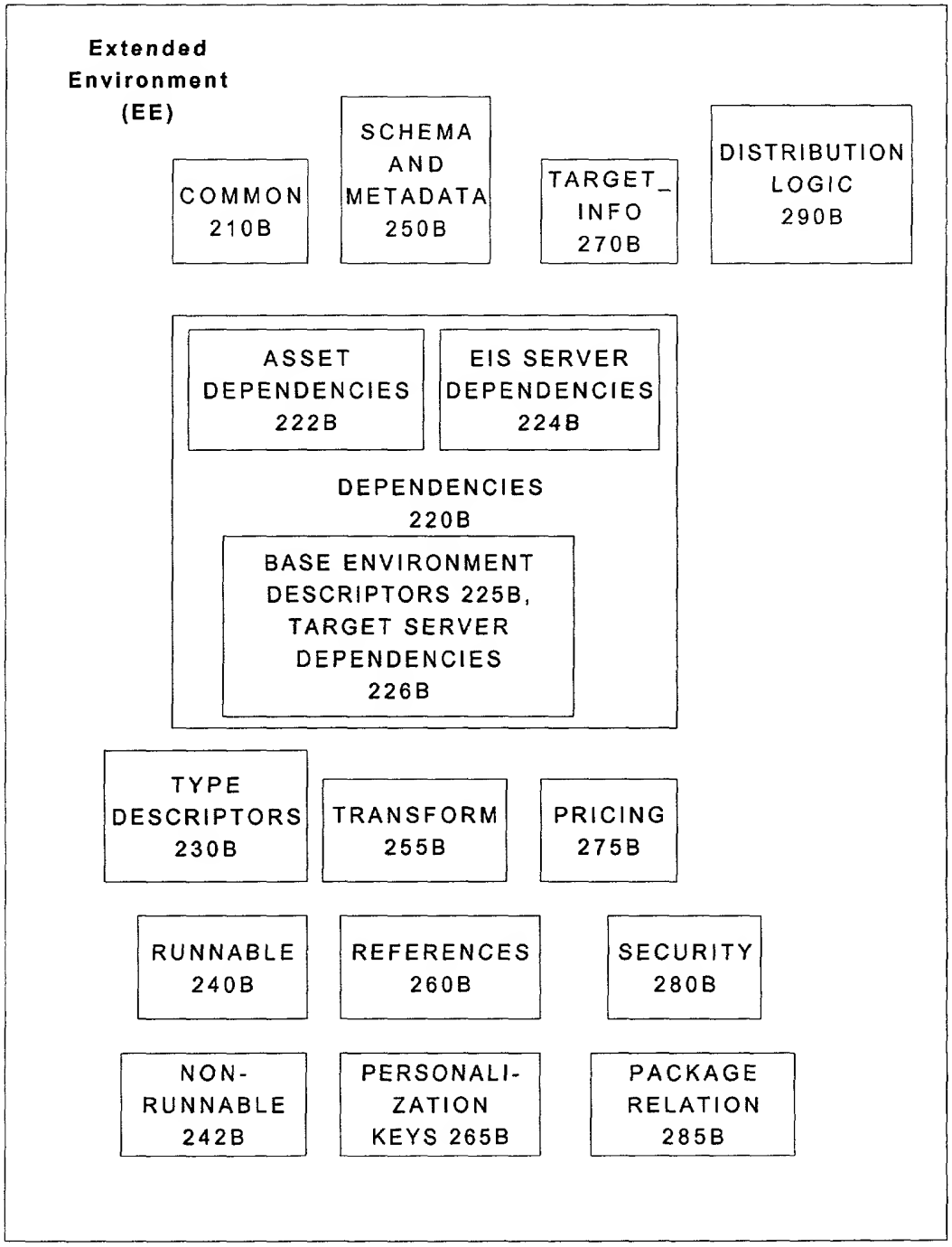


FIGURE 2B

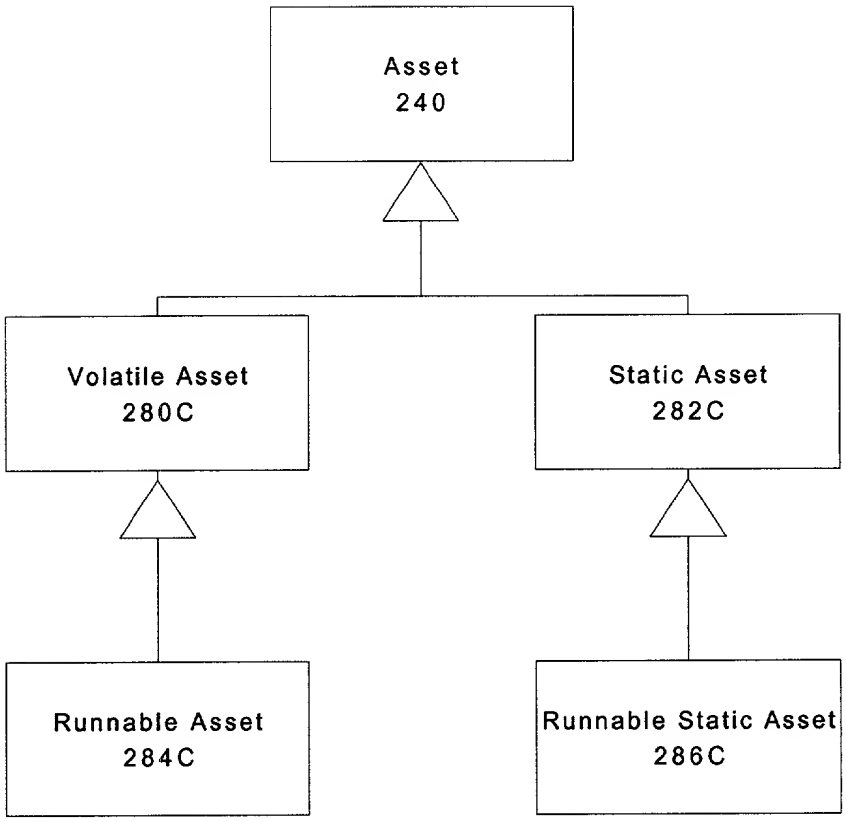
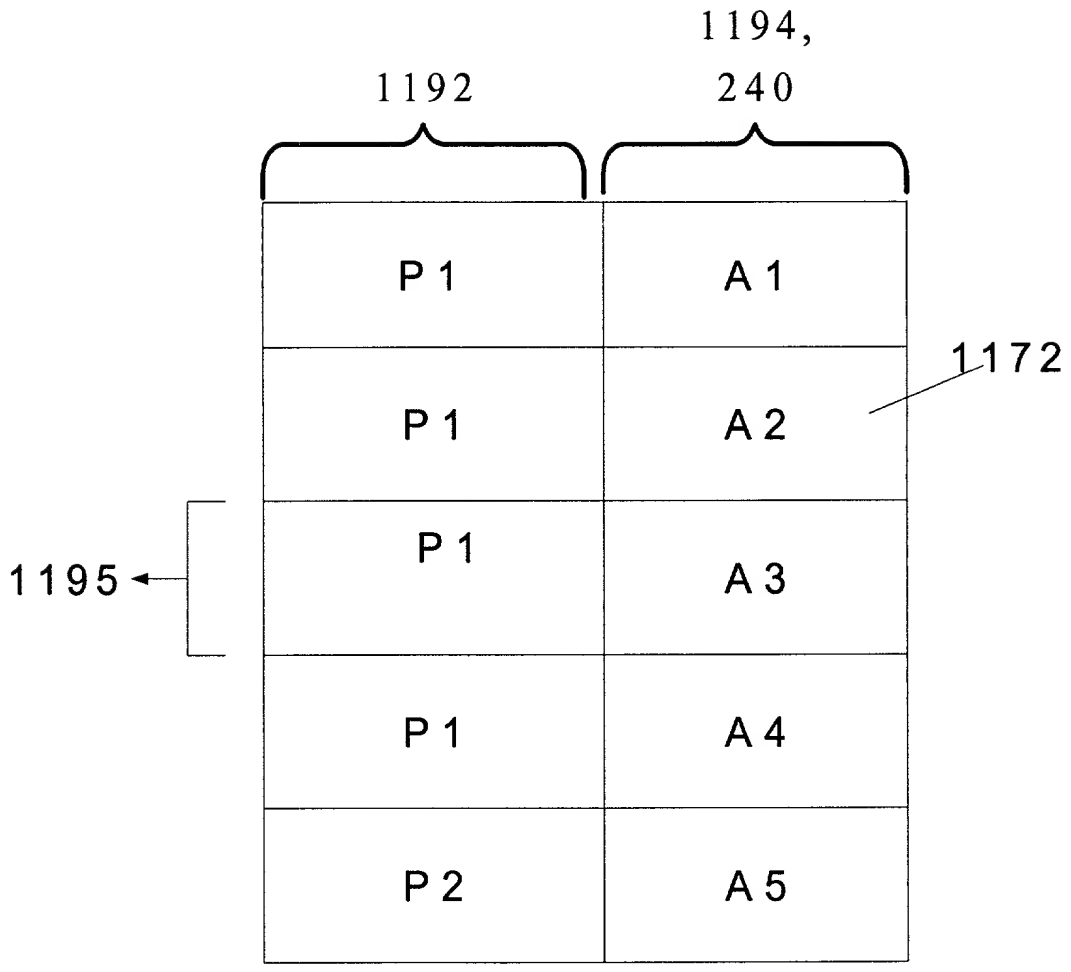

Asset
240
Volatile Asset
280C
Static Asset
282C
Runnable Asset
284C
Runnable Static Asset
286C

Figure 2C

1190



Package Content Data Structure

Figure 3

1170

Asset ID 1172	Location (Machine Location URL) 1174	Name 1176	Asset Type 1178	Other (Optional) 1179
A 1			240T	
A 2				
A 3				

1194

1175

Asset
Definition Data
Structure

Figure 4

Deployable Asset Data Structure 1370

Asset ID 1372	Version 1374

1375

Figure 5

1380

Client Deployment Queue

Target/ Client ID 1382

1385

Figure 7

1390

Cient ID 1392	Client Assets 1394

Client Asset Table

Figure 6

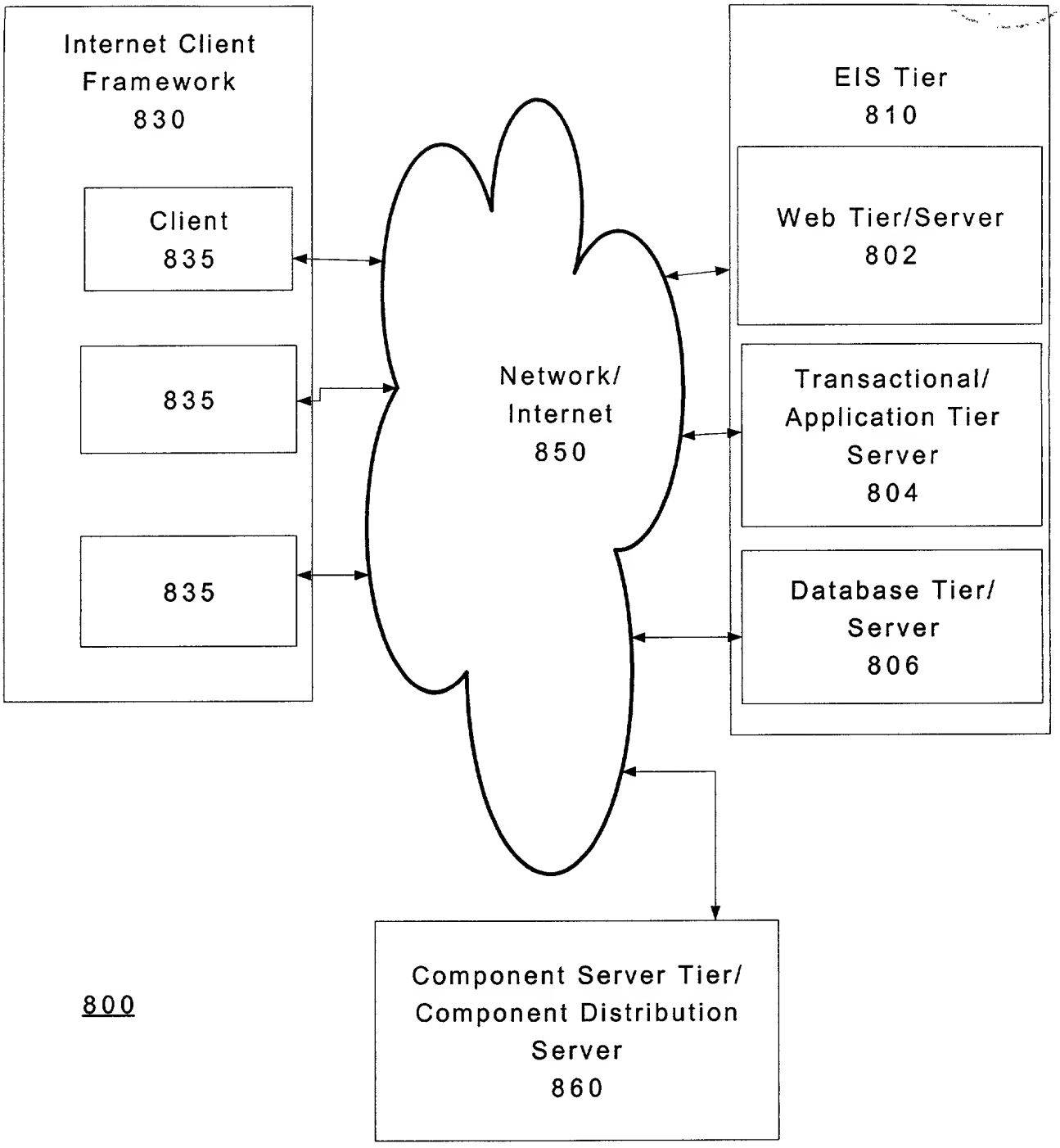

Internet Client Framework
830
Client
835
835
835
Network/
Internet
850
EIS Tier
810
Web Tier/Server
802
Transactional/
Application Tier
Server
804
Database Tier/
Server
806
Component Server Tier/
Component Distribution
Server
860
800

FIGURE 8

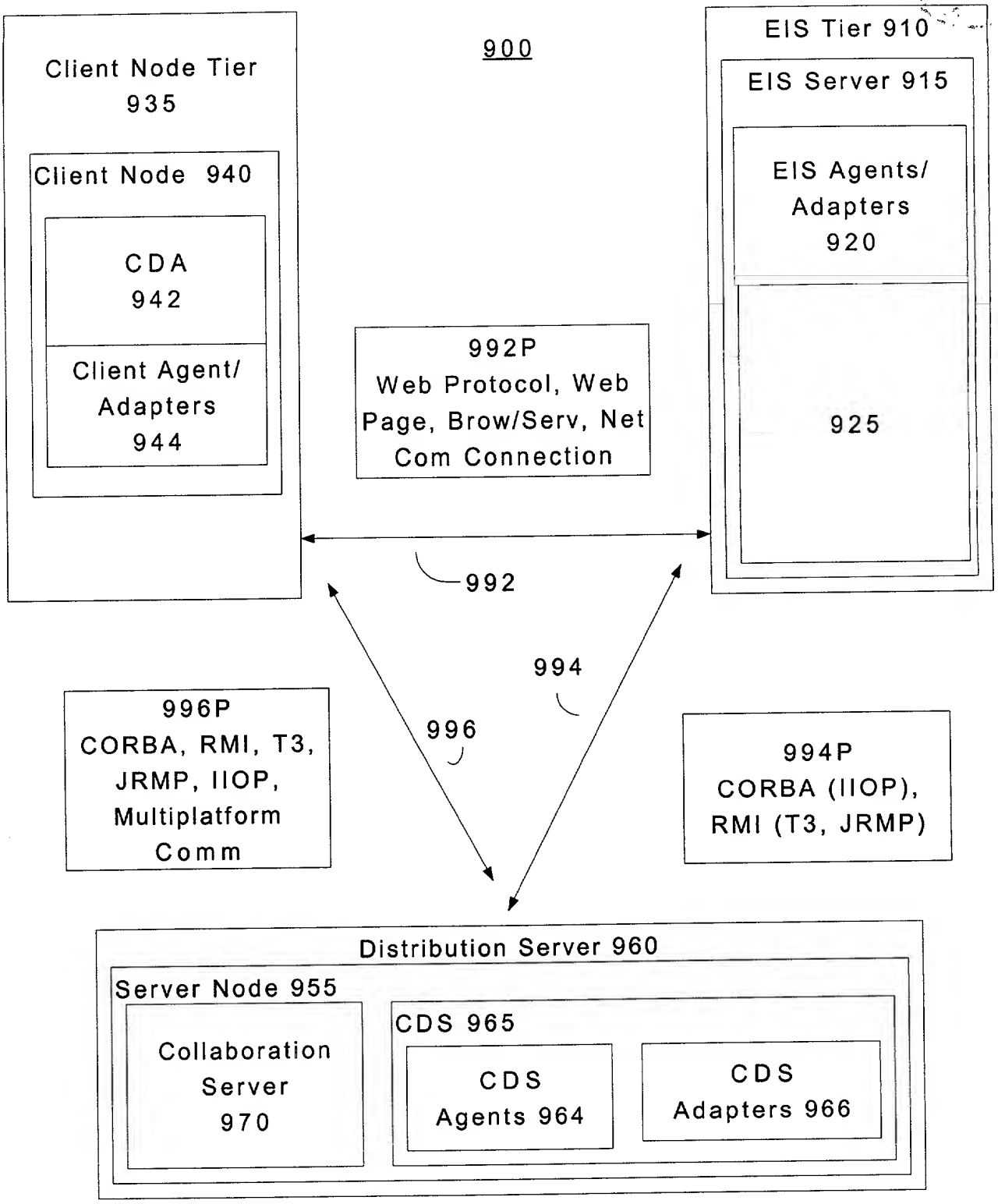

900
Client Node Tier
935
Client Node 940
CDA
942
Client Agent/
Adapters
944
992P
Web Protocol, Web
Page, Brow/Serv, Net
Com Connection
EIS Tier 910
EIS Server 915
EIS Agents/
Adapters
920
925
992
994
996
996P
CORBA, RMI, T3,
JRMP, IIOP,
Multiplatform
Comm
994P
CORBA (IIOP),
RMI (T3, JRMP)
Distribution Server 960
Server Node 955
Collaboration
Server
970
CDS 965
CDS
Agents 964
CDS
Adapters 966

FIGURE 9

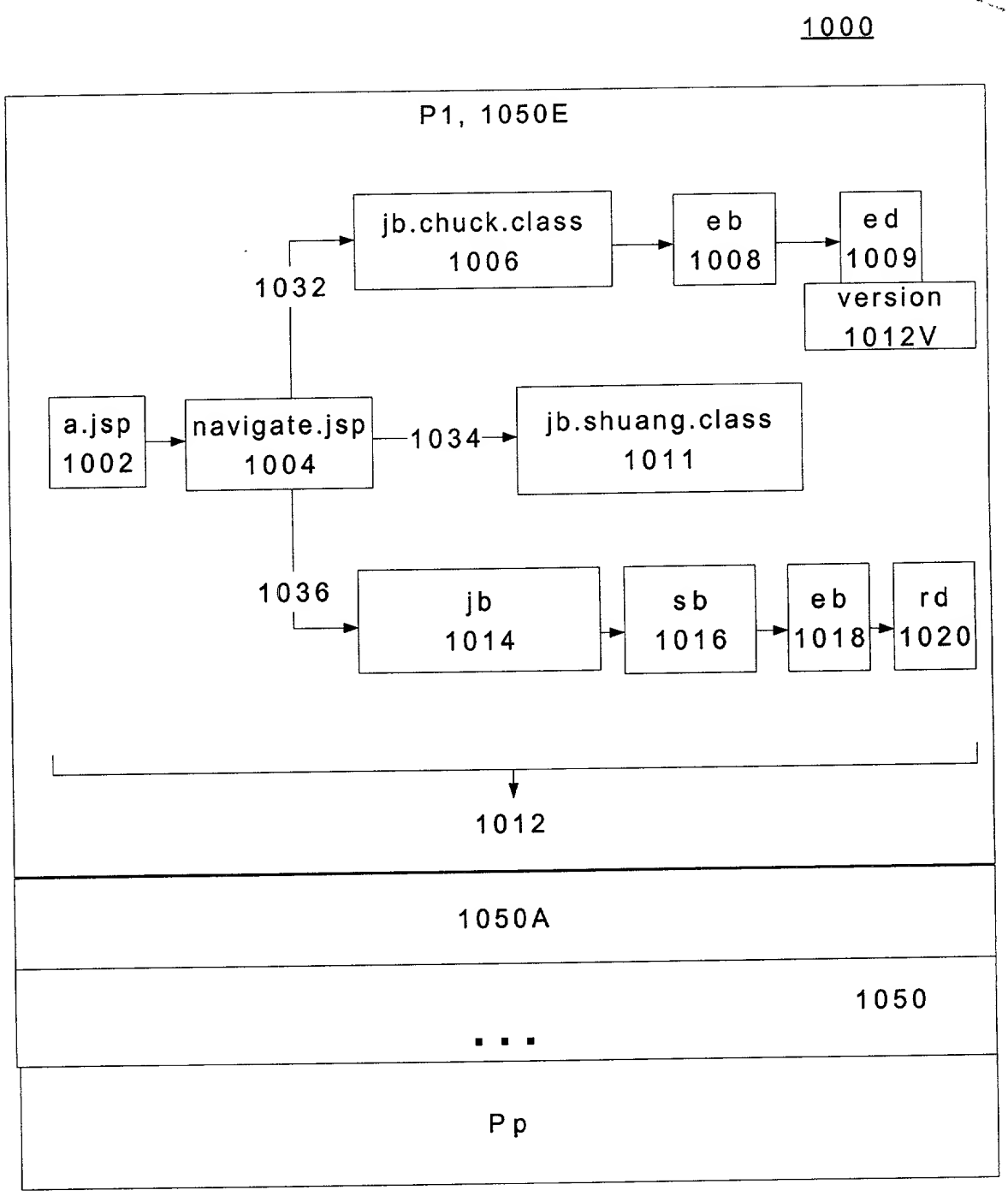

1000
P1, 1050E
jb.chuck.class
1006
eb
1008
ed
1009
version
1012V
1032
a.jsp
1002
navigate.jsp
1004
1034
jb.shuang.class
1011
1036
jb
1014
sb
1016
eb
1018
rd
1020
1012
1050A
1050
Pp

Figure 10

1100

Package ID 1110	1150						Location (e.g URL) 1120	Other 1163
	Immediate 1152	Delivery Start Time 1154	Delivery End Time 1156	Expire Time 1158	Remove Time 1160	Refresh Time 1162		
P1								
P1								
P1								

1105

Package Definition Data Structure

Figure 11

1100A

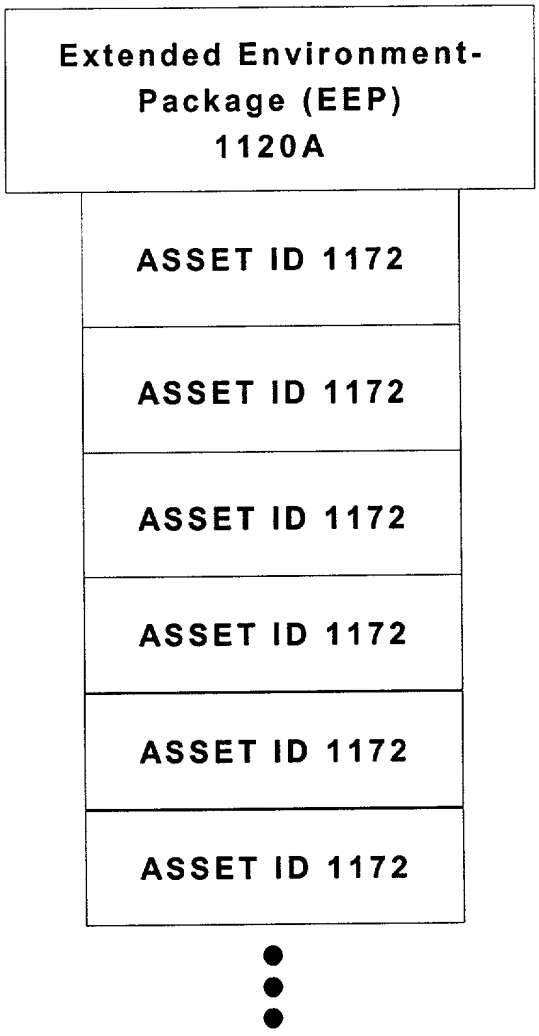
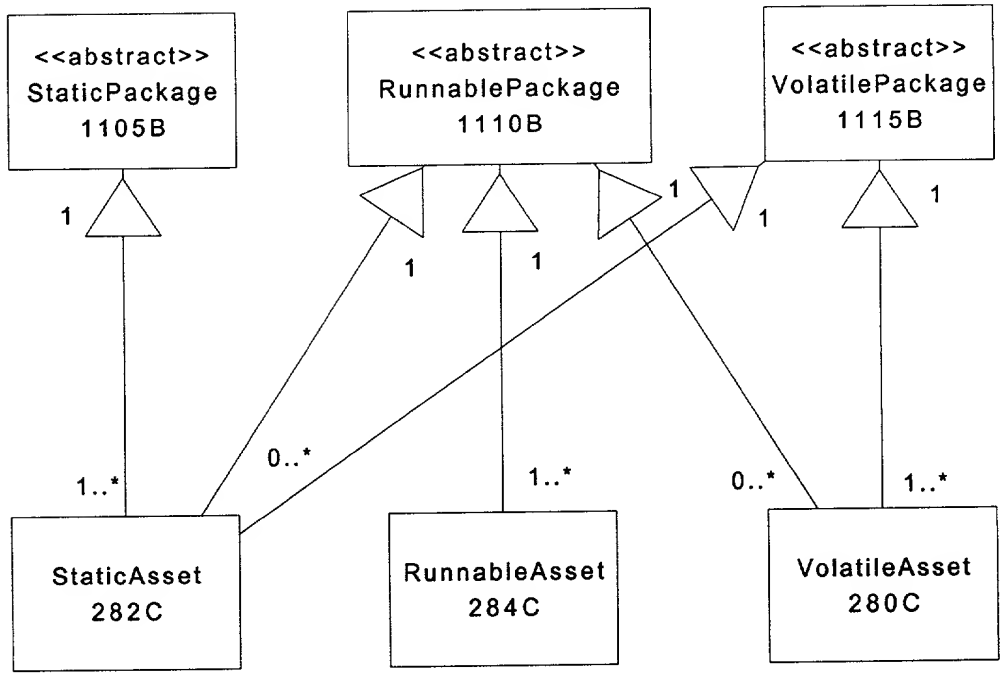


FIGURE 11A



1100B

Figure 11B

1120A

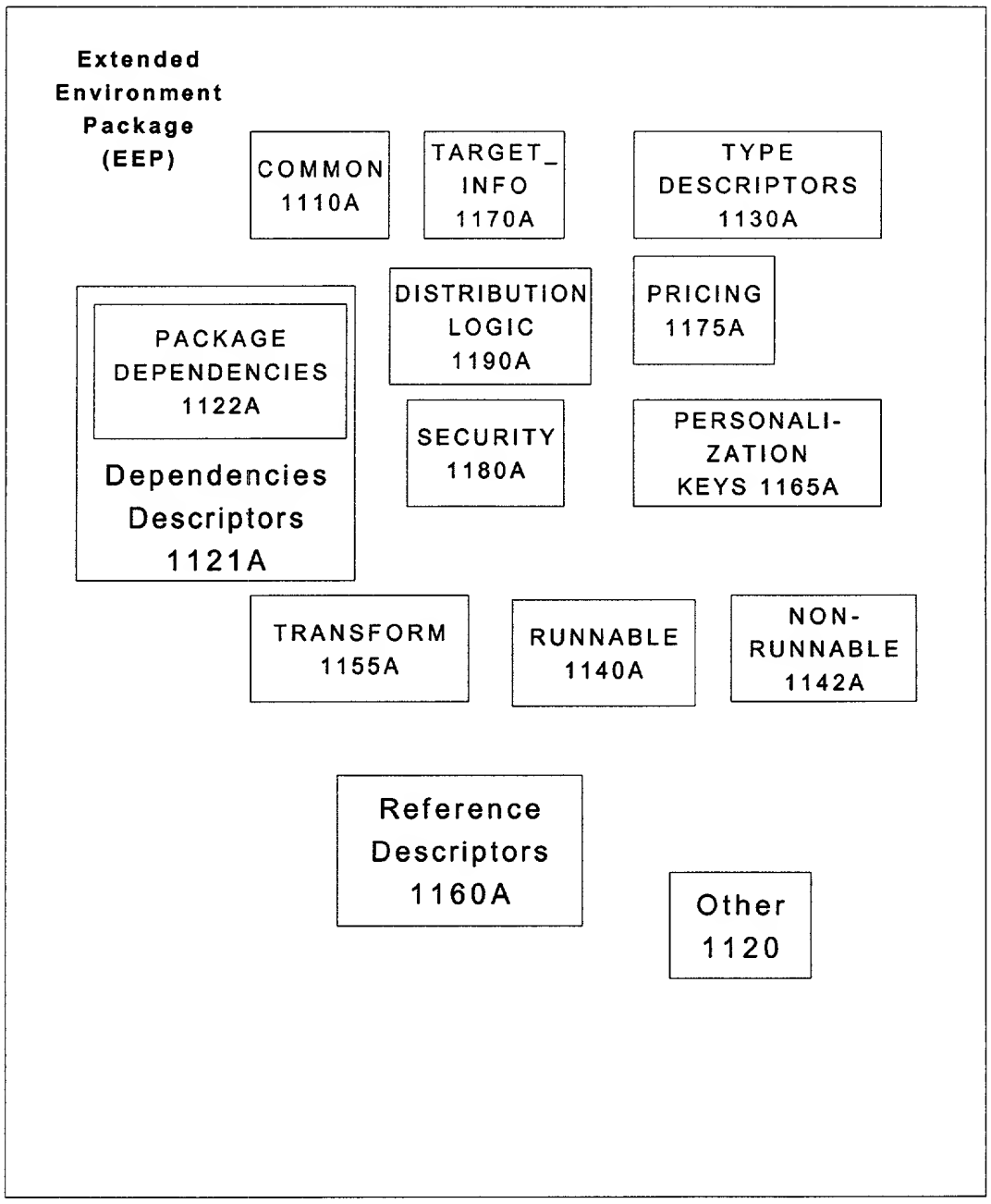
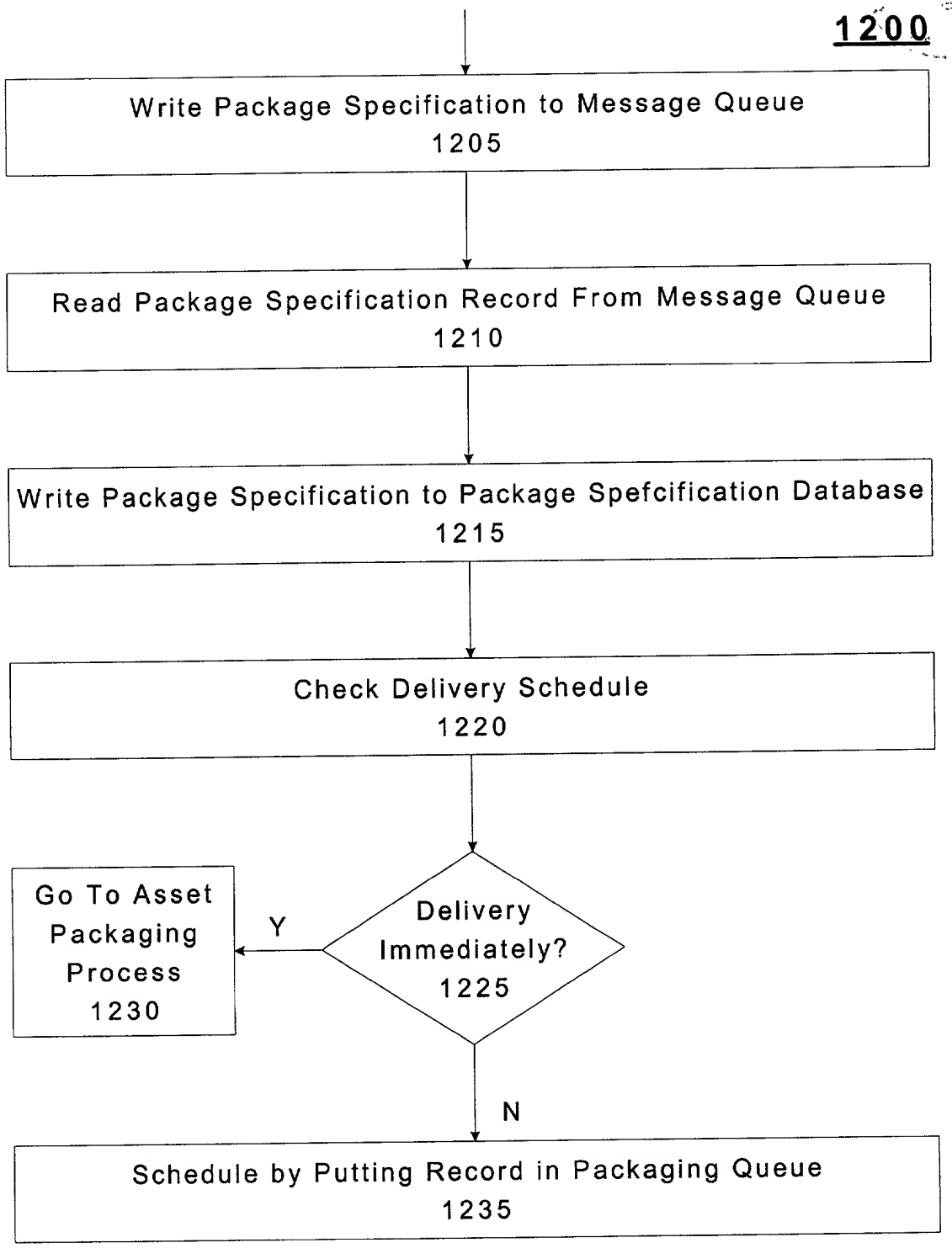


FIGURE 11C



Package Specification Process

Figure 12

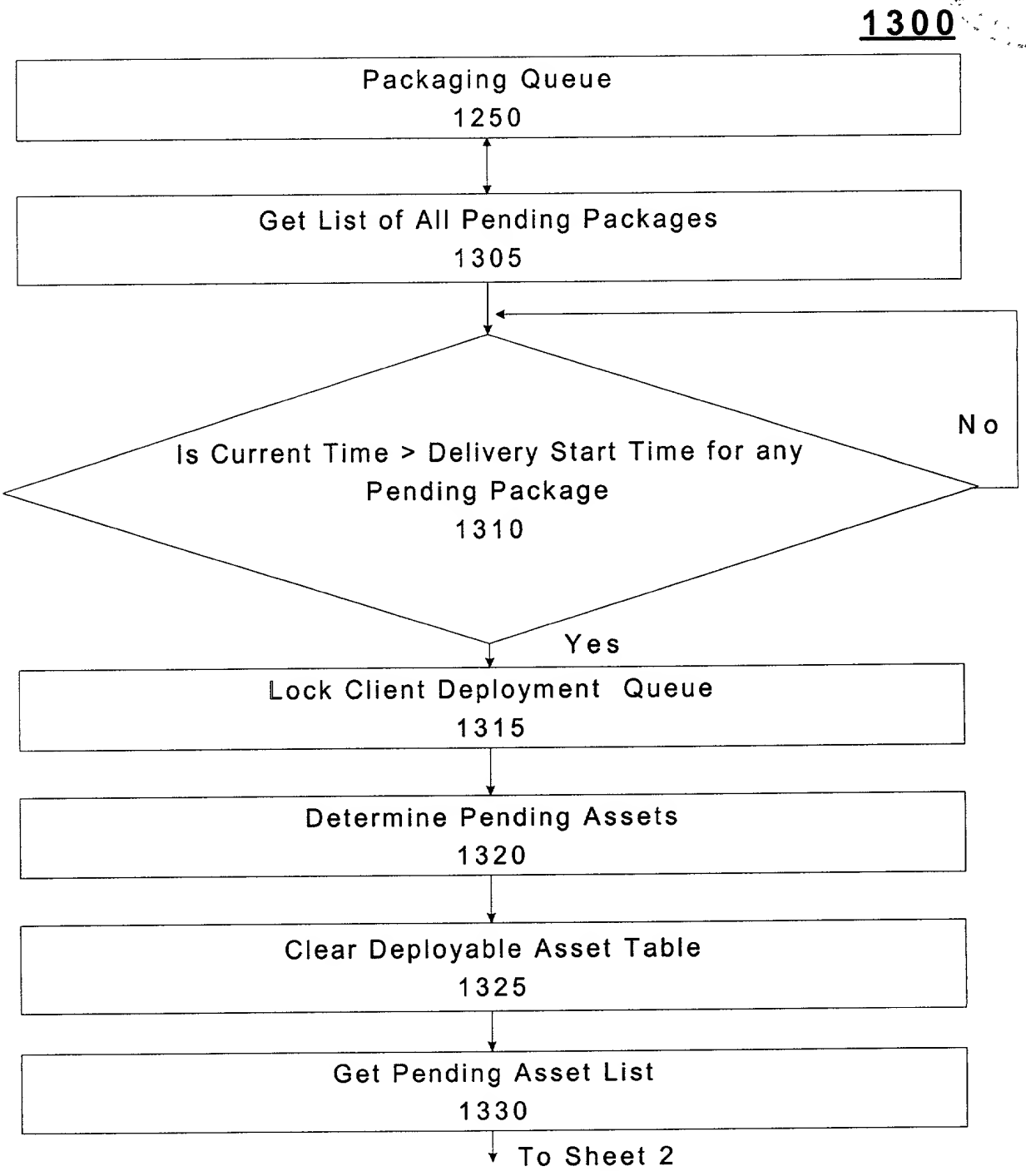
1250

1255

Package ID 1252	Start Time 1254

Packaging Queue

Figure 12A

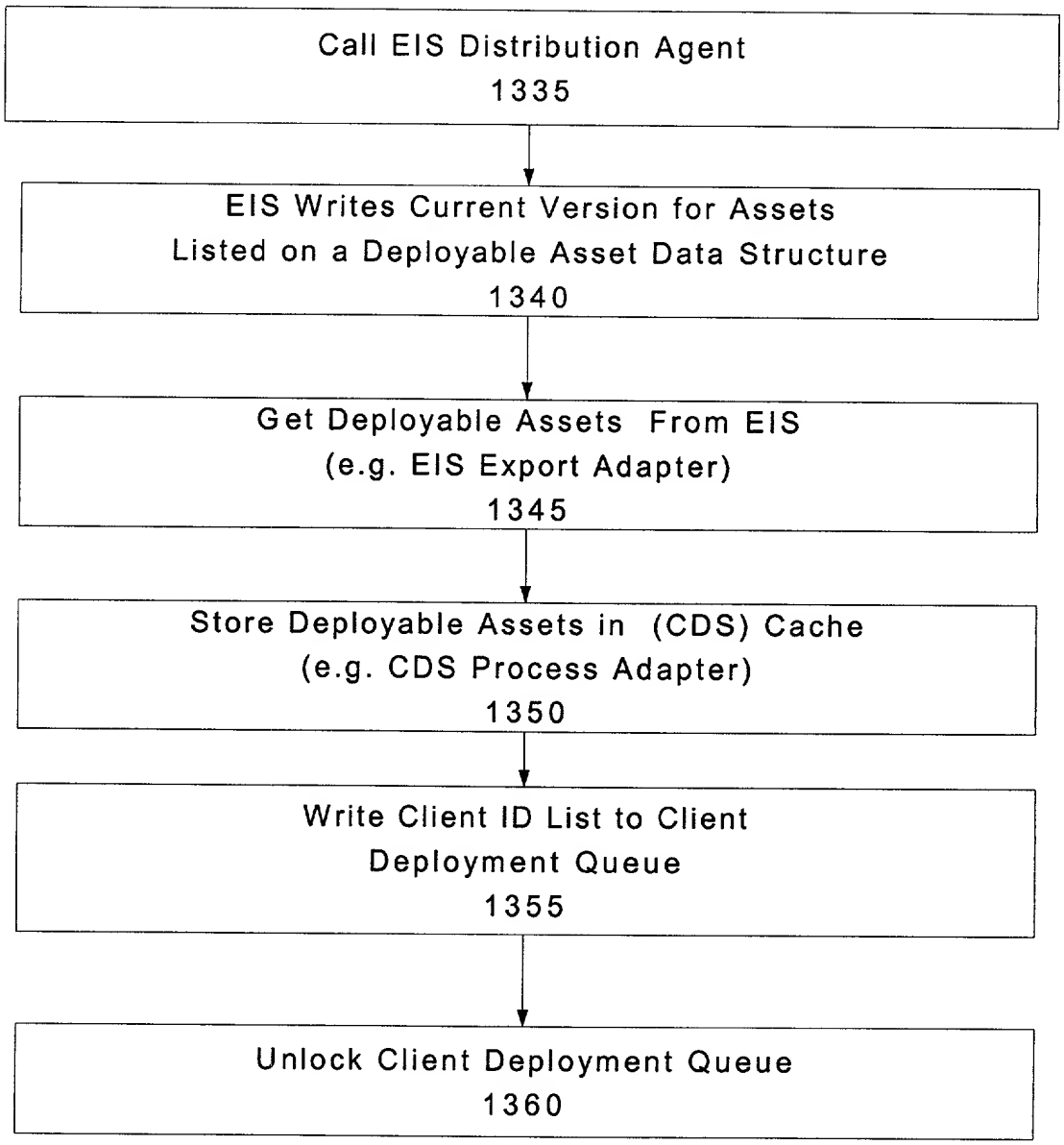


Asset Packaging Process

Figure 13 - Sheet 1

1300

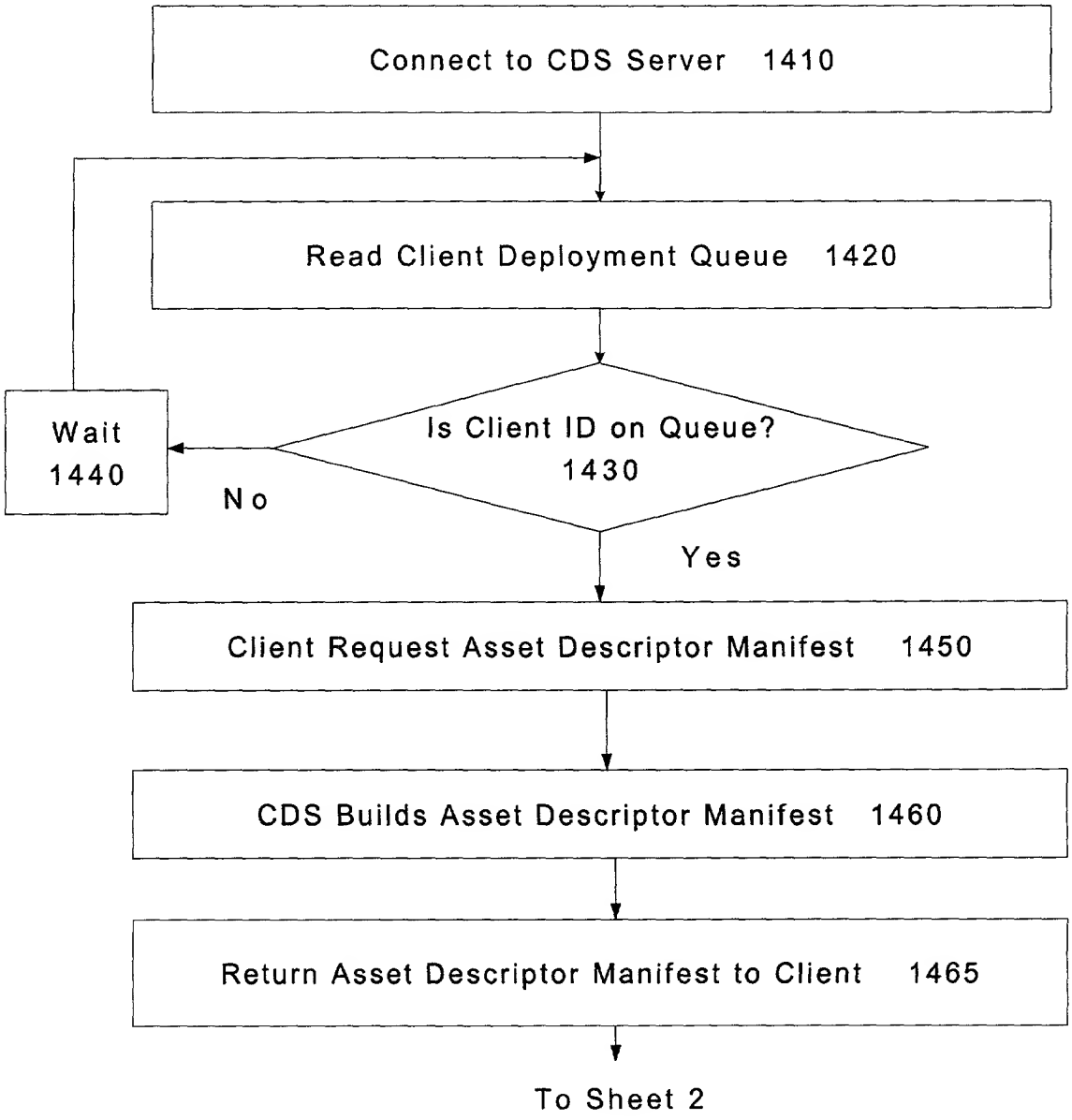
From Sheet 1



Asset Packaging Process

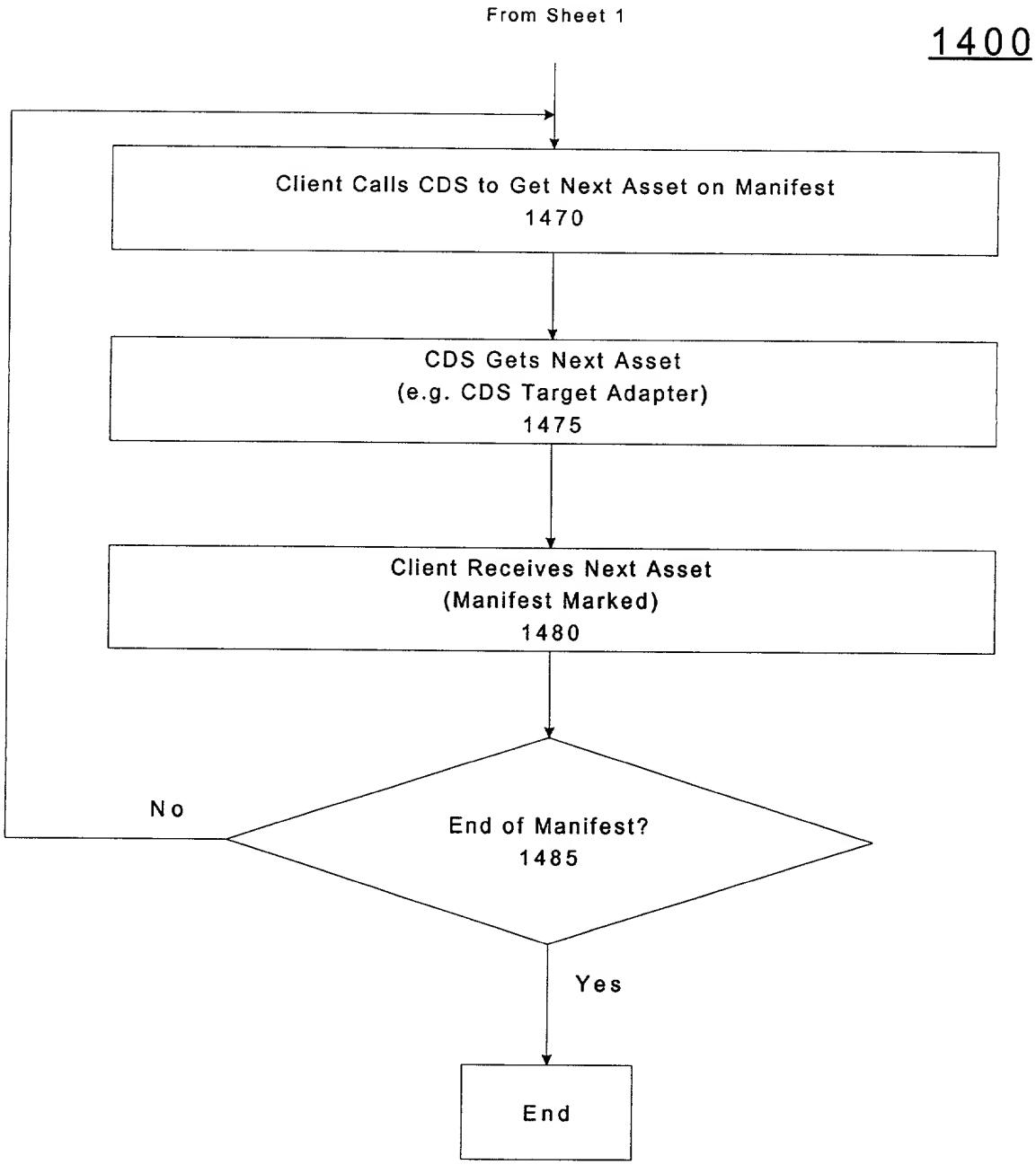
Figure 13 - Sheet 2

1400



Client Deployment Process

Figure 14 - Sheet 1



Client Deployment Process

Figure 14 - Sheet 2

1490

Client ID 1452				
Asset ID 1454	Offset 1456	Asset Type 1458 (Optional)	Cache Name 1478	Version (Timestamp) 1479

1453

Asset Descriptor Manifest Data Structure

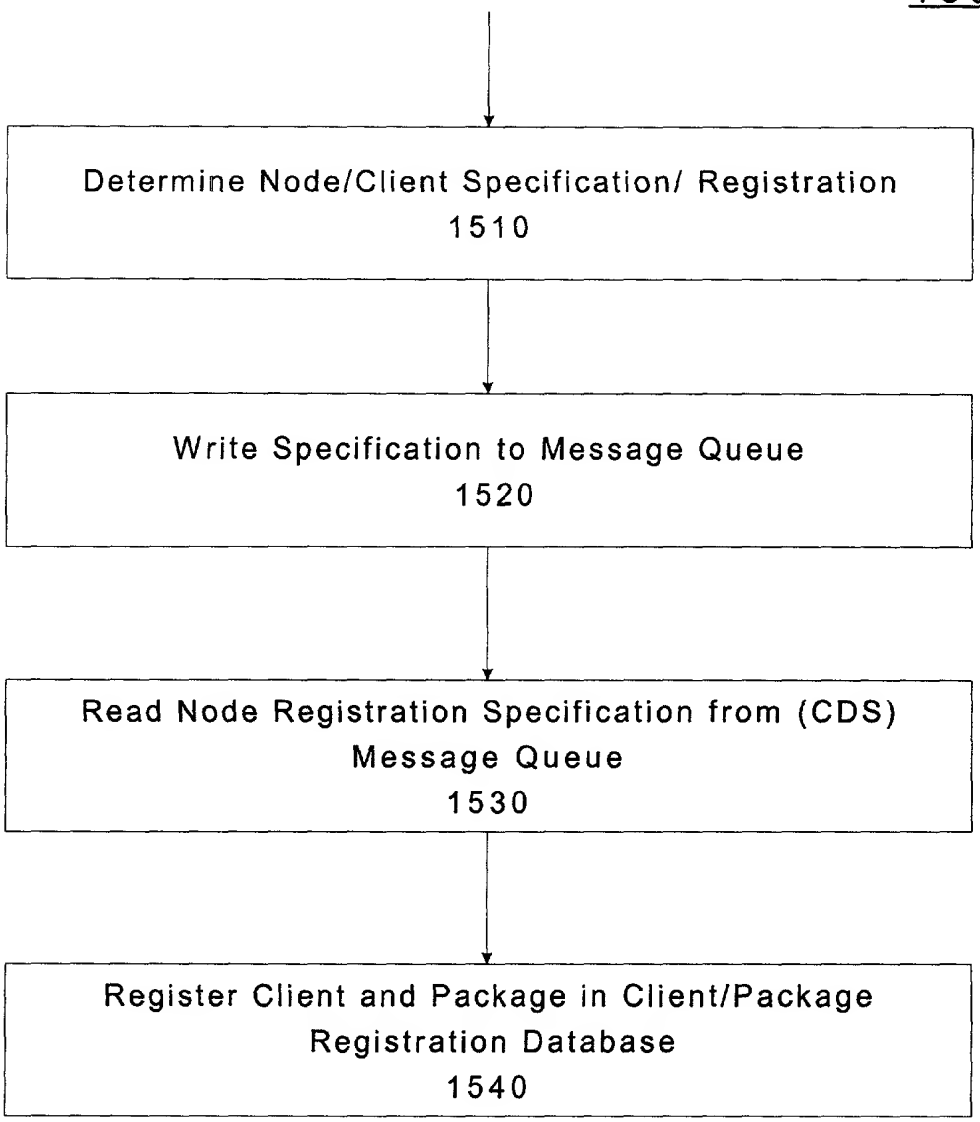
Figure 14 A

1495

Client ID 1452	Asset ID 1454	Version (Timestamp) 1479

Client Asset Table

Figure 14B



Node Registration Process

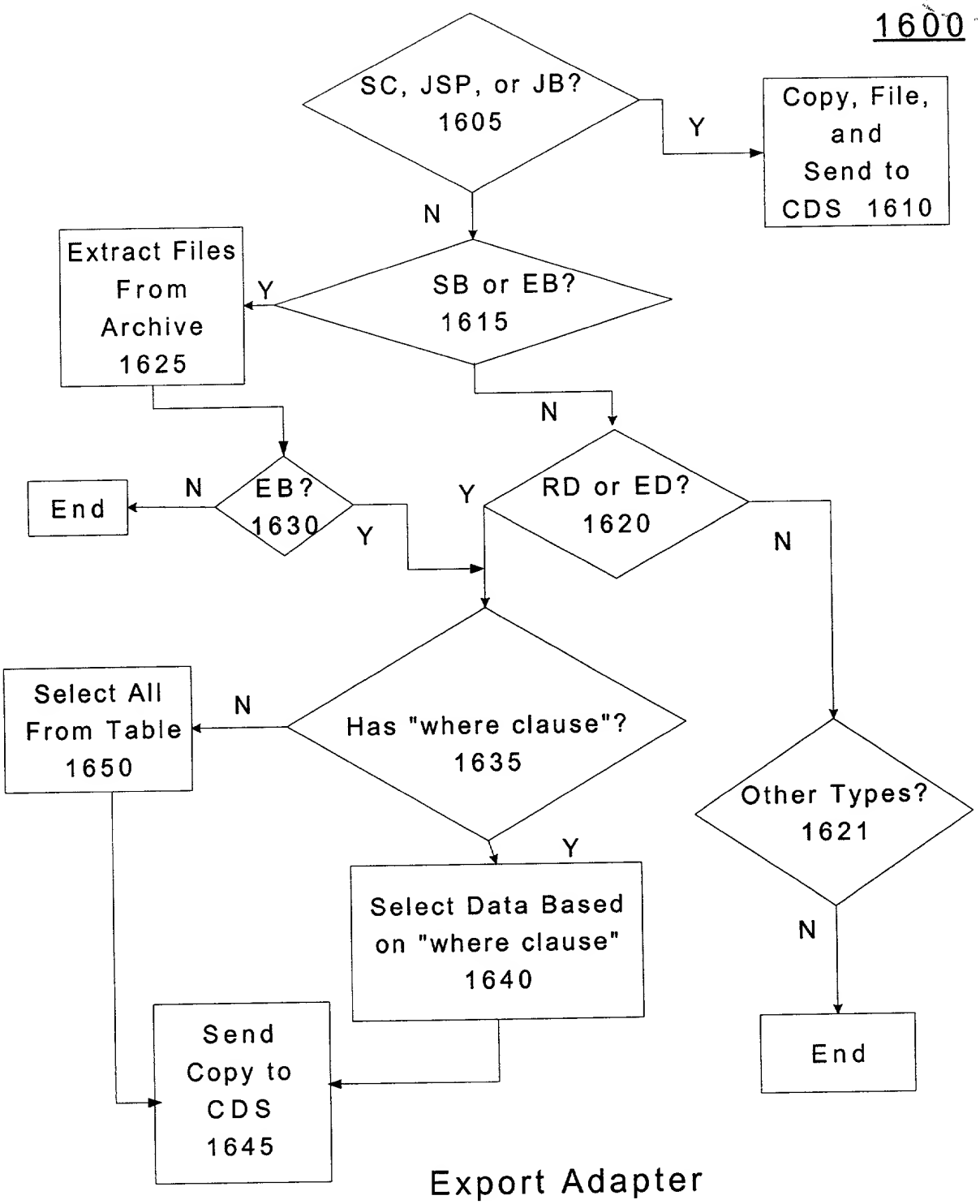
Figure 15

1522

Node ID 1524	Package ID 1526

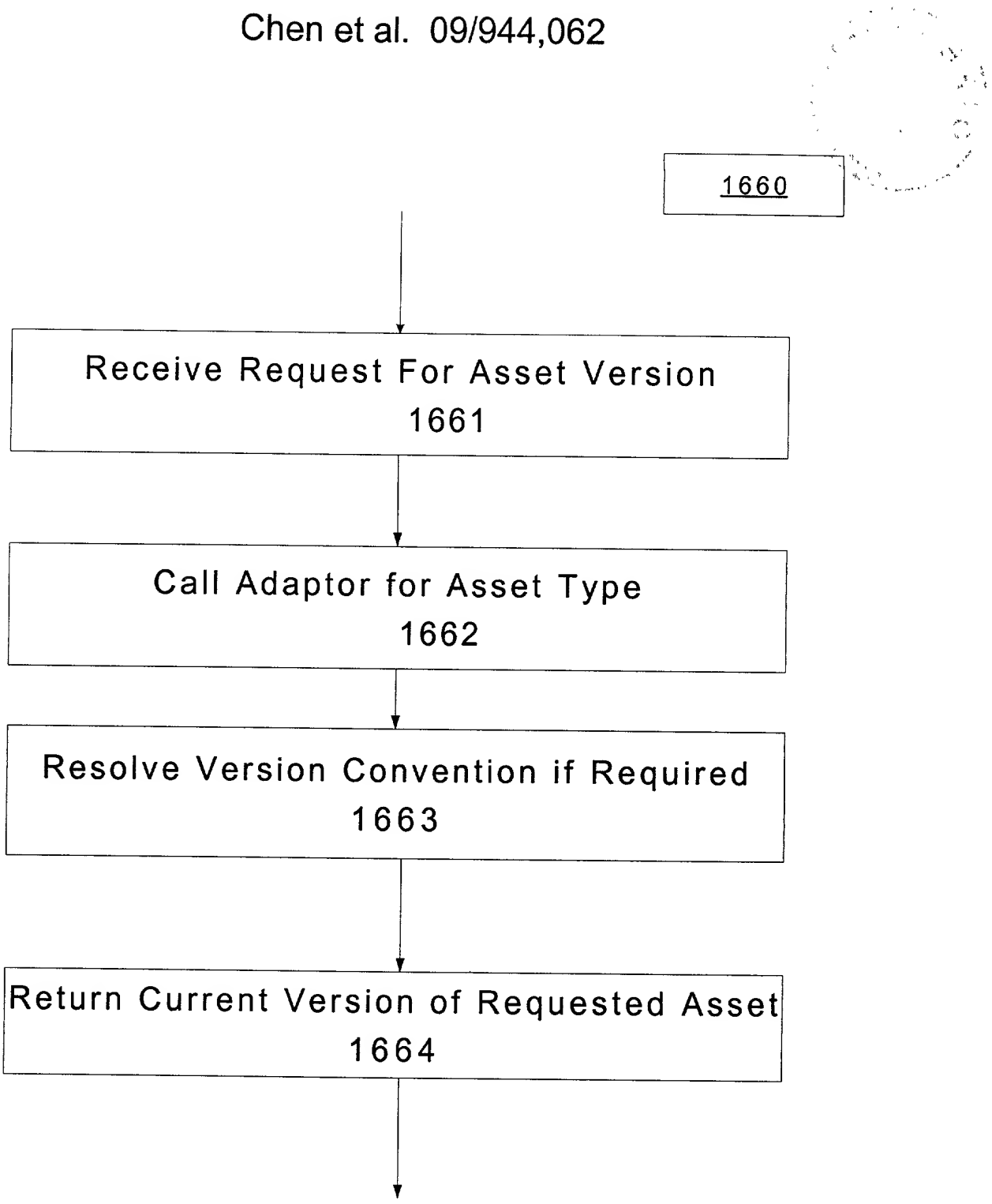
Node Registration Specification

Figure 15A



Export Adapter Method

Figure 16



Version Asset Adapter Process - VAM

Figure 16A

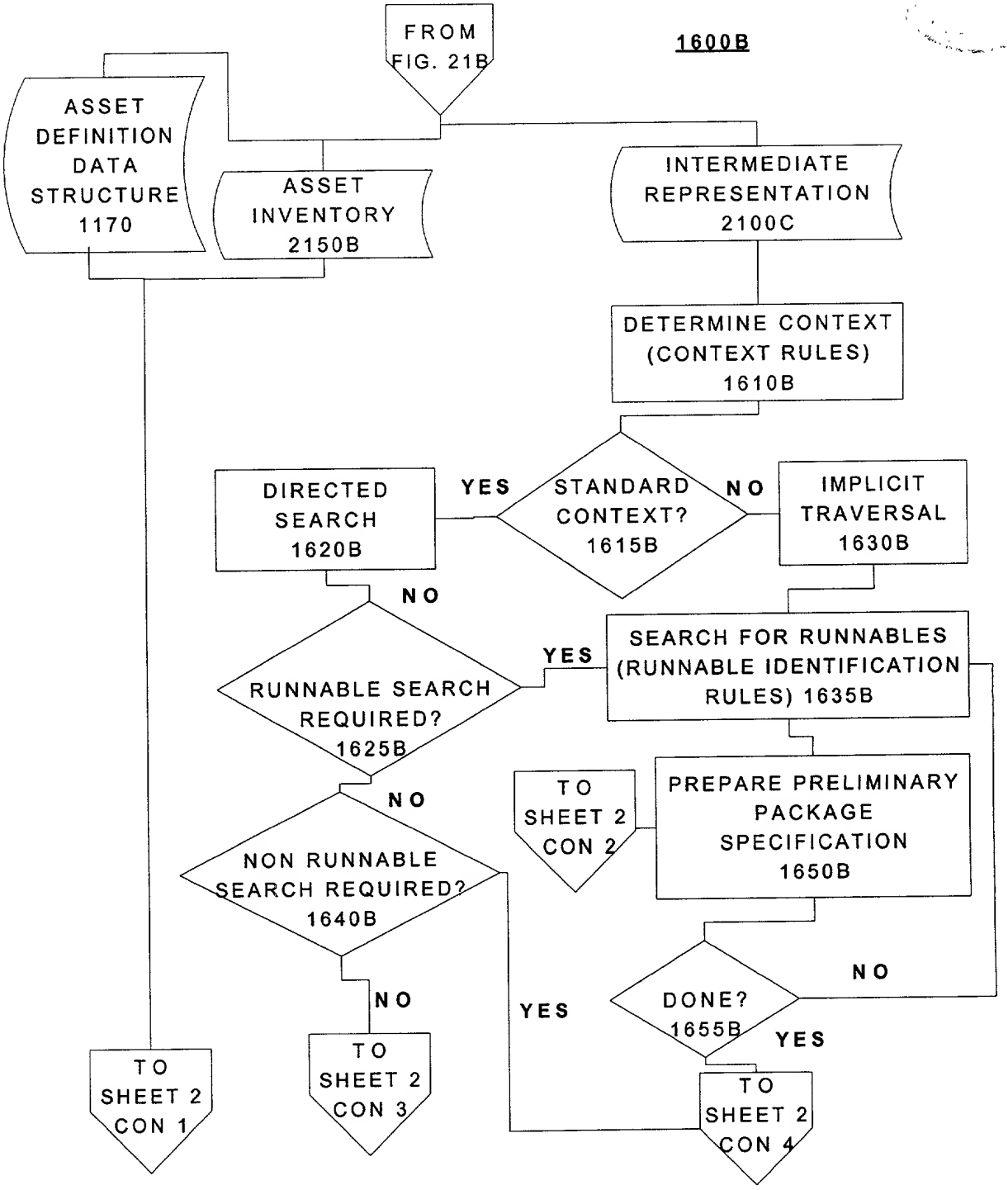


FIG. 16B
SHEET 1

1600B - 2

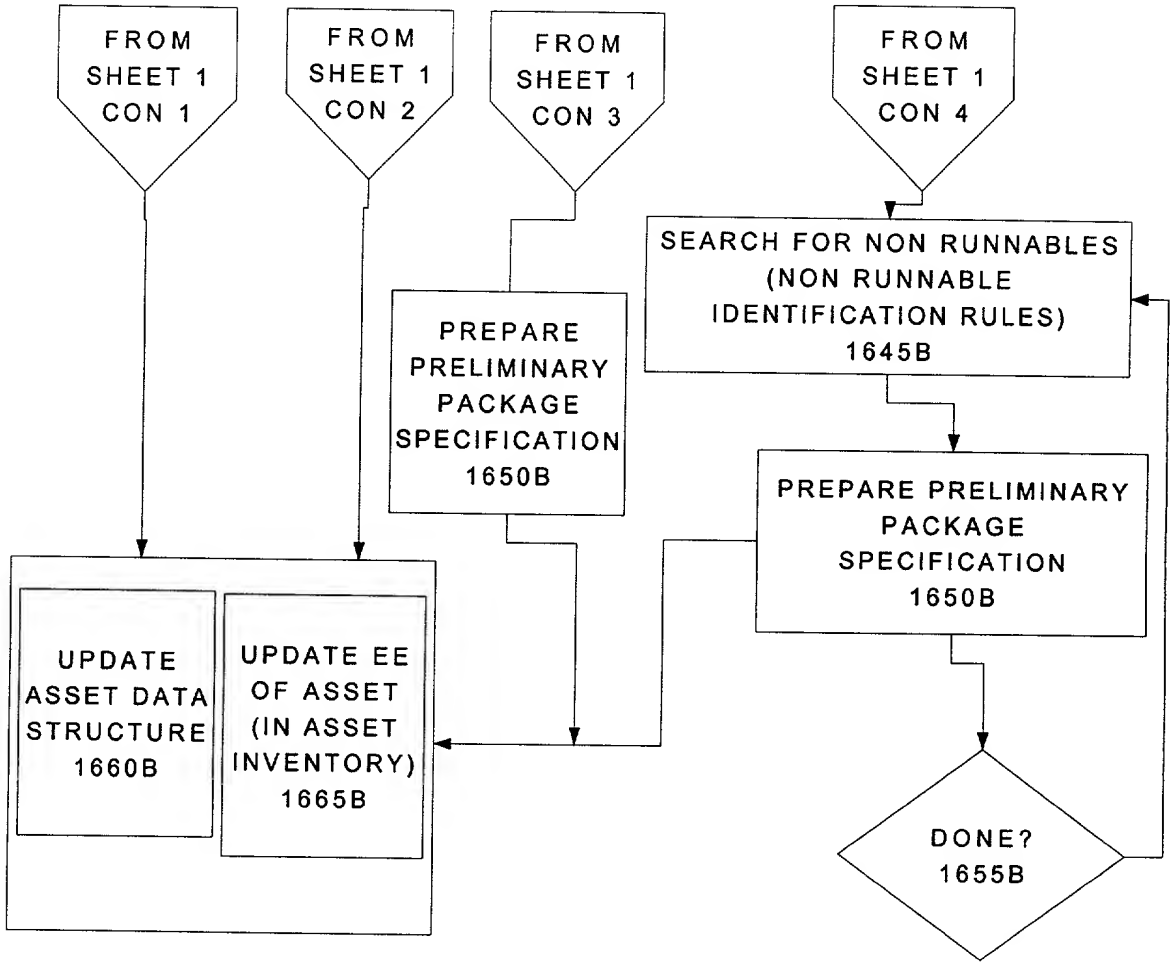
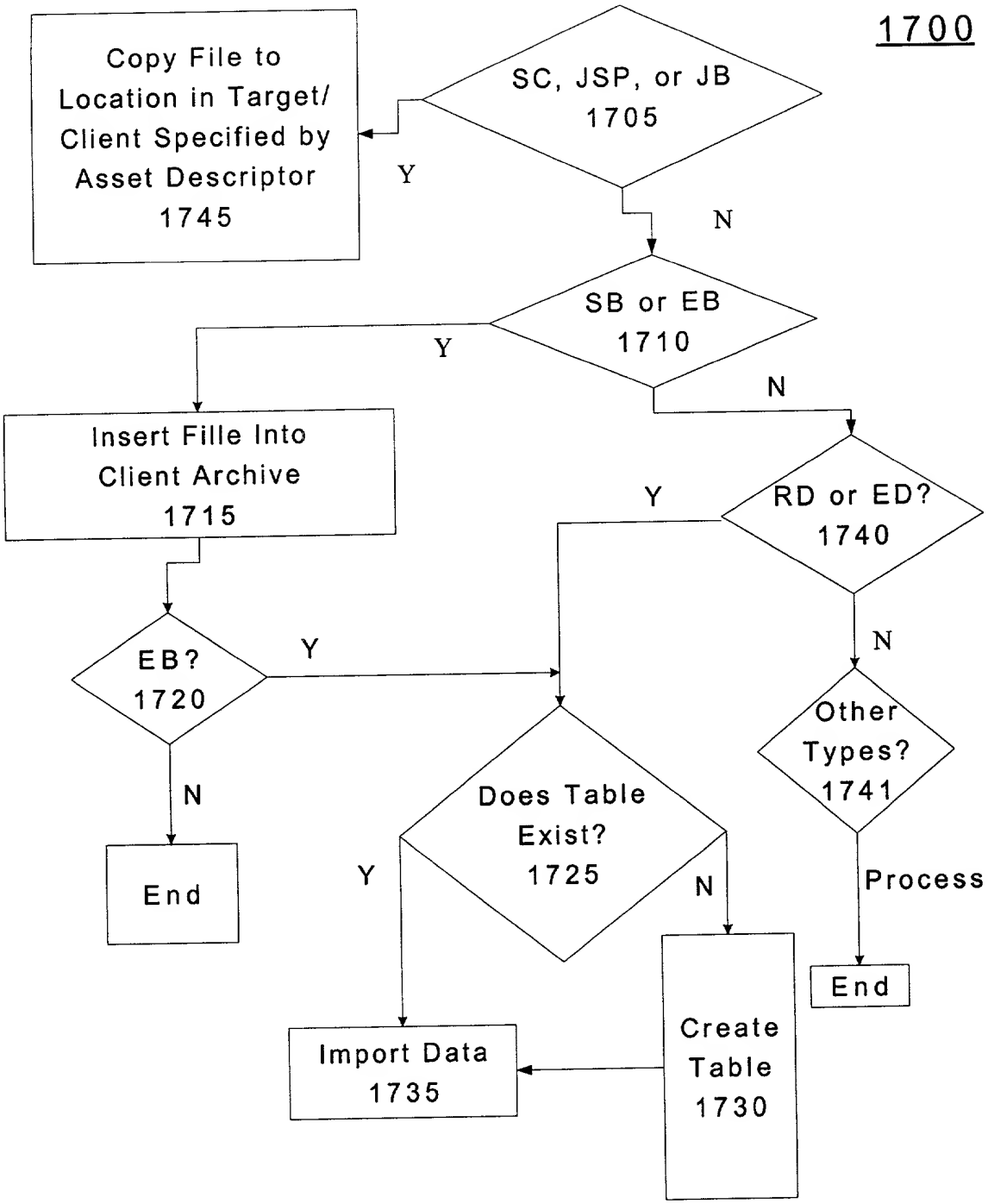


FIG. 16B
SHEET 2



Deploy Adapter Method

Figure 17

1700A

DIS TRANSACTIONAL DEPLOYMENT SPHERE OF CONTROL

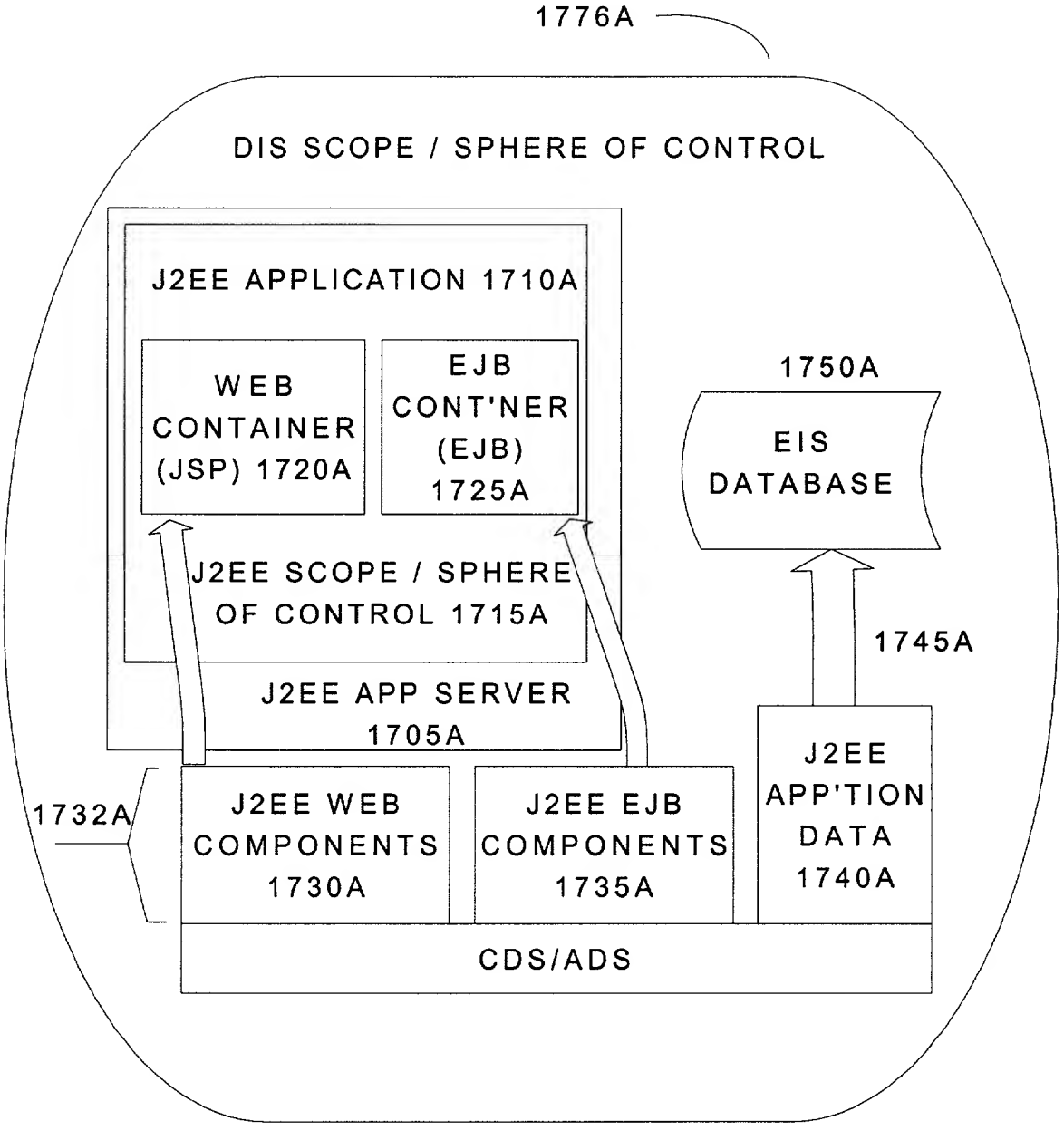
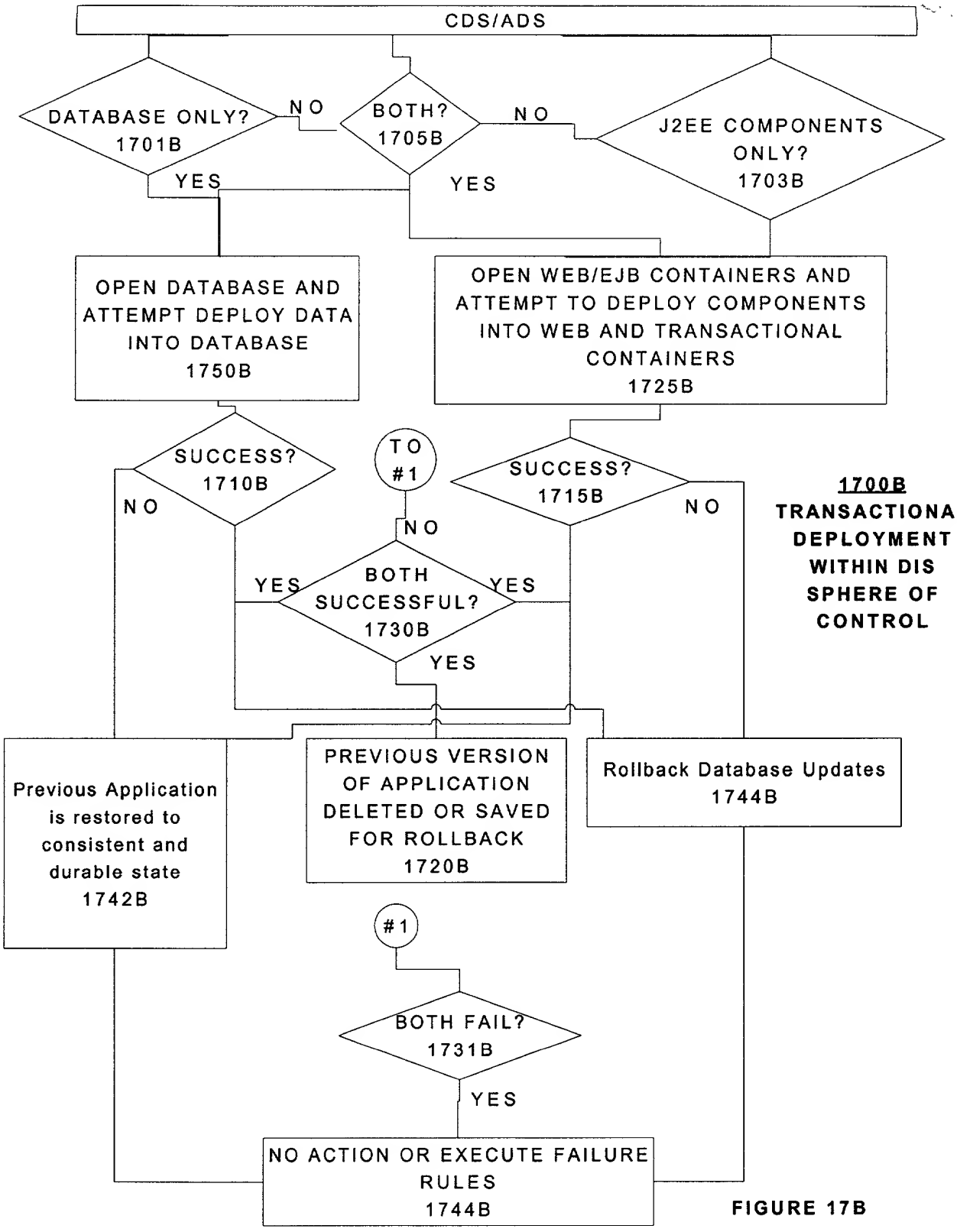
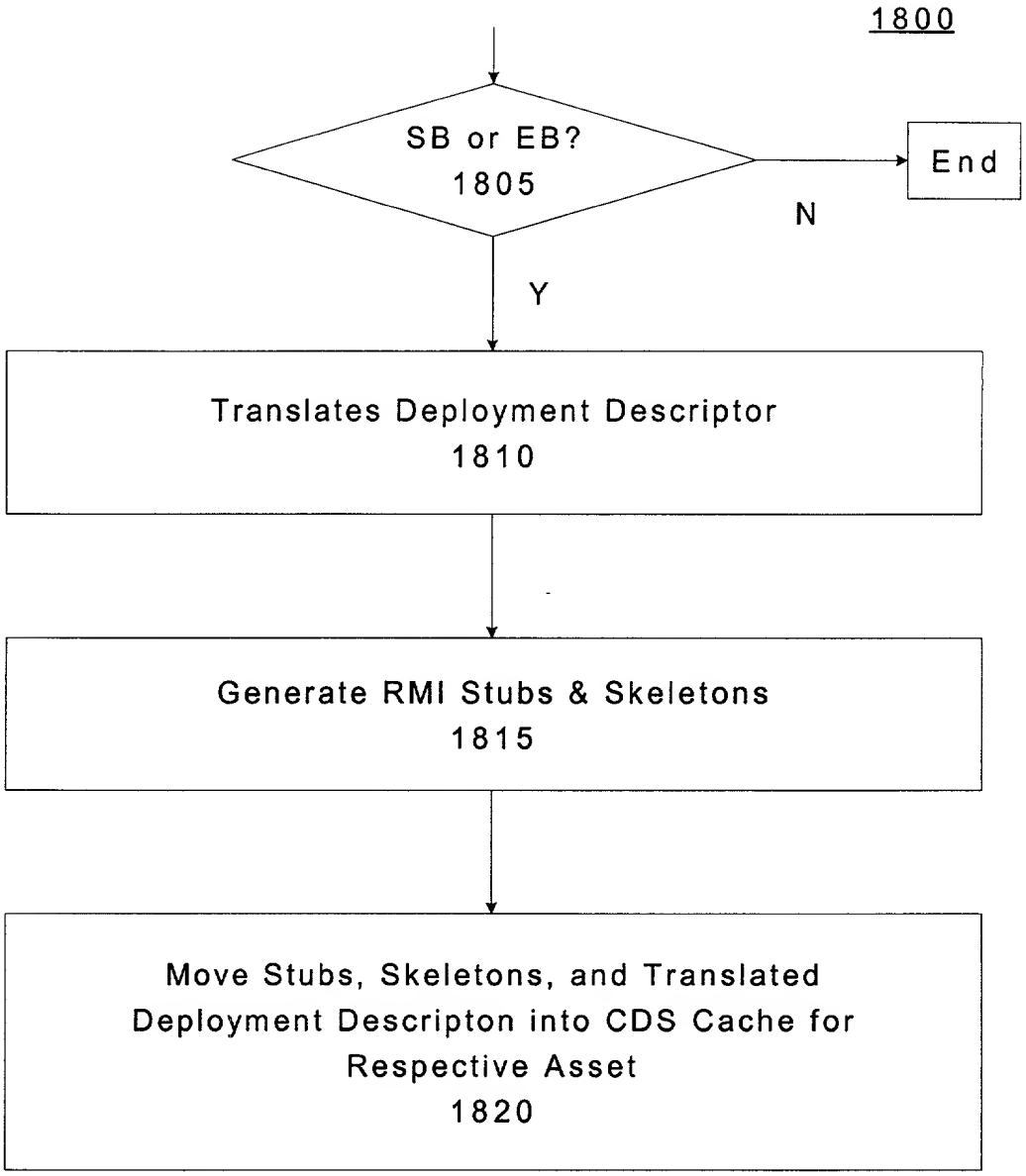


FIGURE 17A



1700B TRANSACTIONAL DEPLOYMENT WITHIN DIS SPHERE OF CONTROL

FIGURE 17B



Process Adaptor Method

Figure 18

1800A

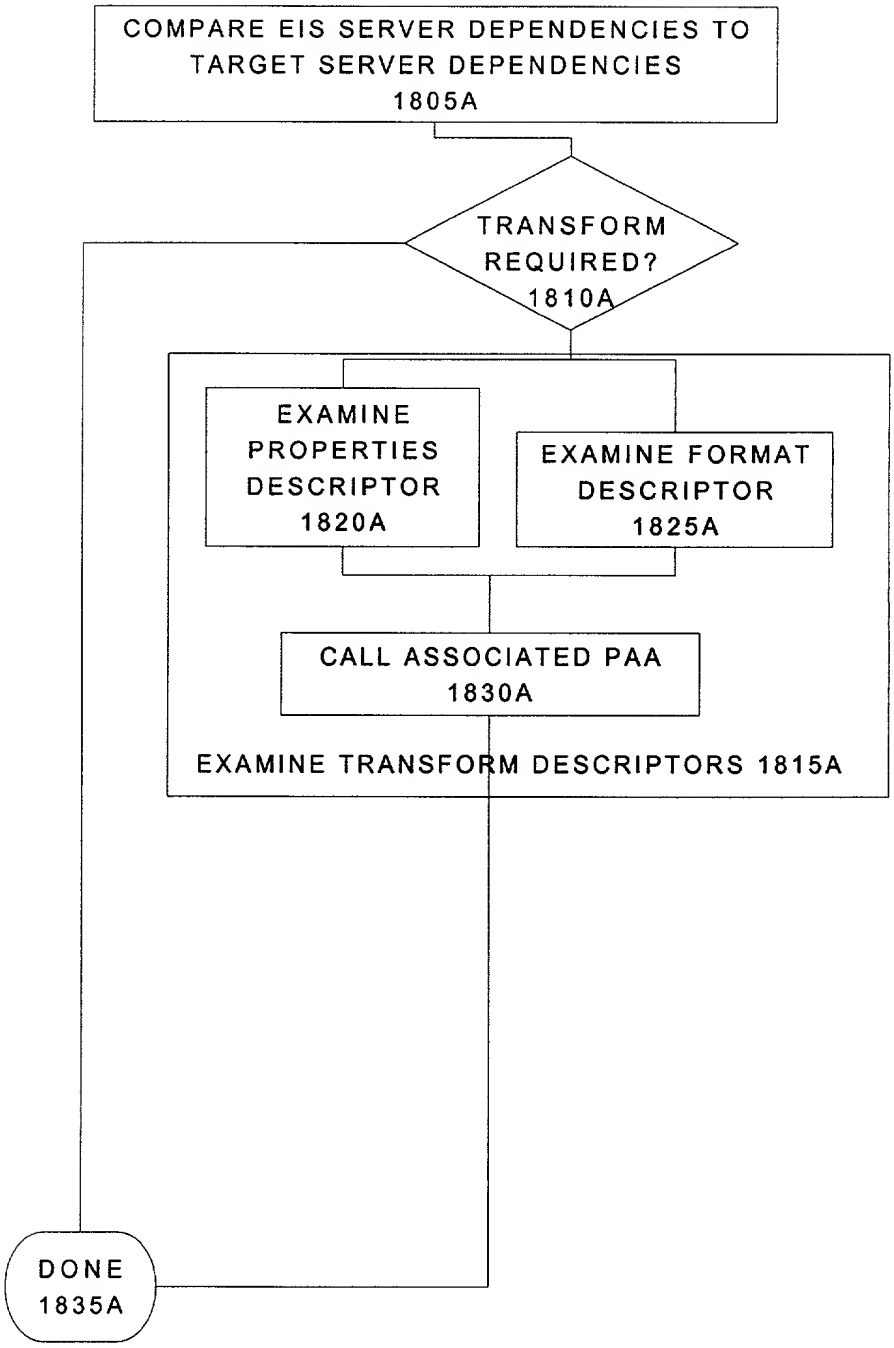
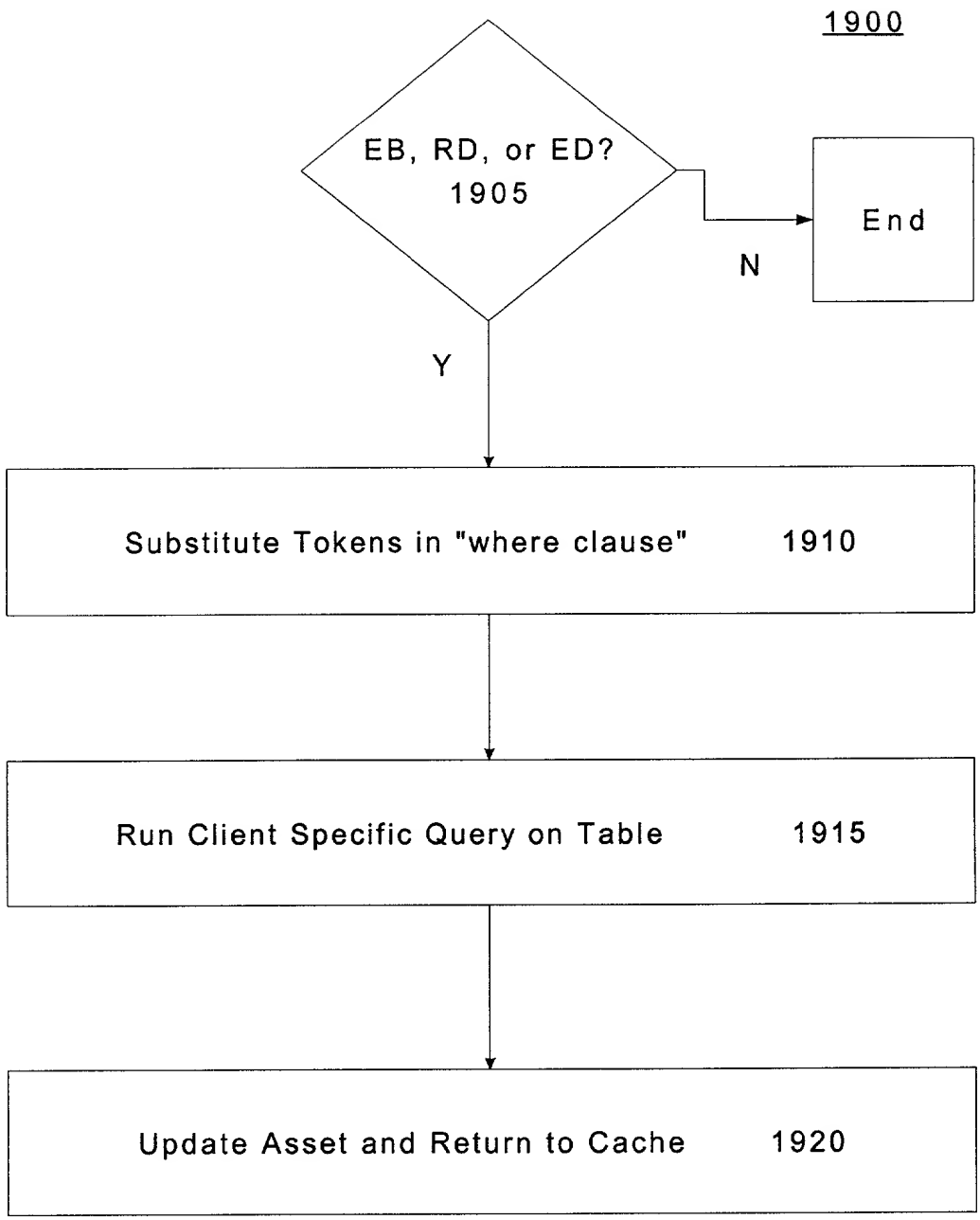


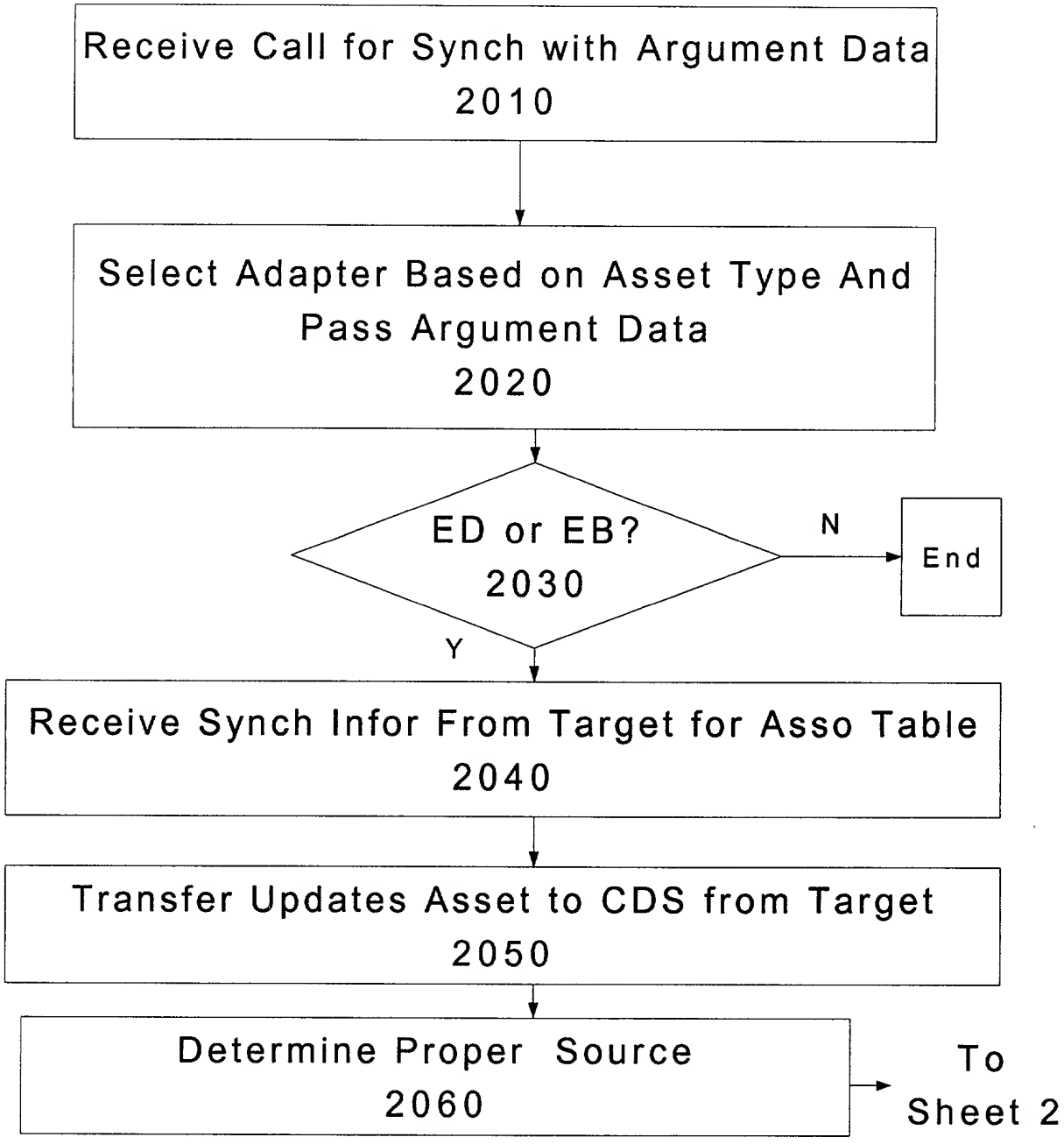
FIGURE 18A



Target Adapter Method

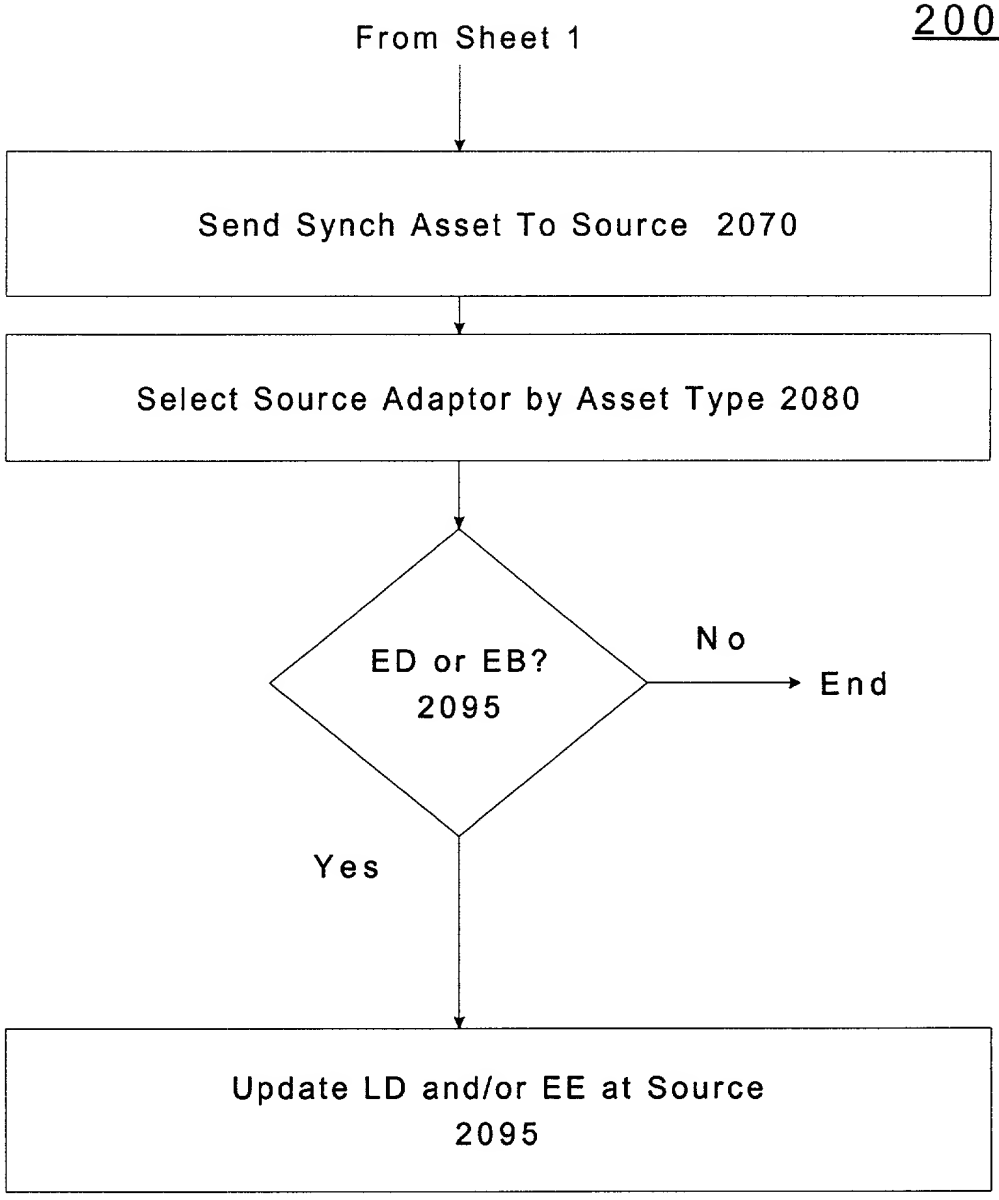
Figure 19

2000



Synchronize Asset Adapter Process

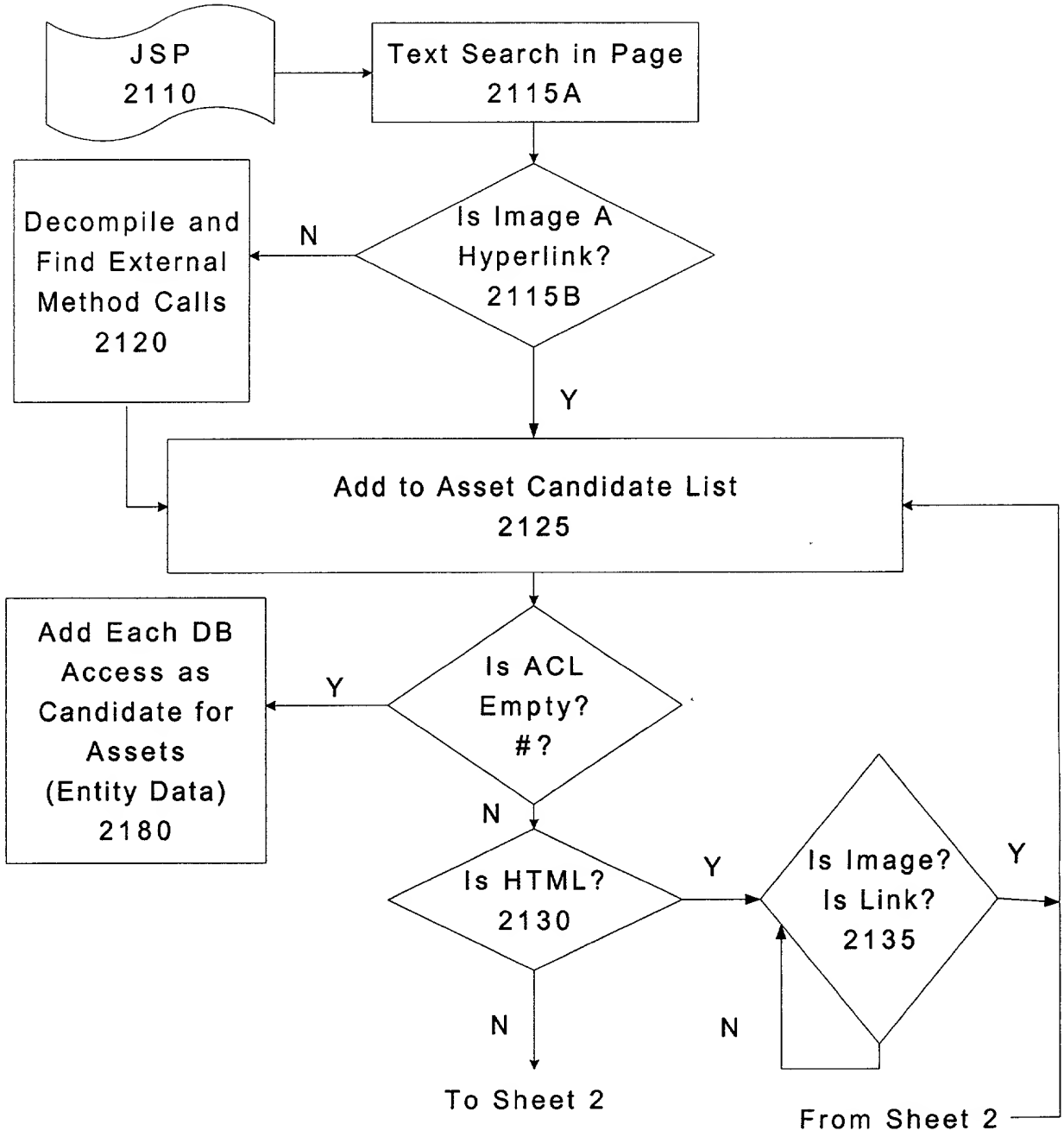
Figure 20 - Sheet 1



Synchronize Asset Adapter Process

Figure 20 - Sheet 2

2100



Discovery Asset Adapter Method

Figure 21 - Sheet 1

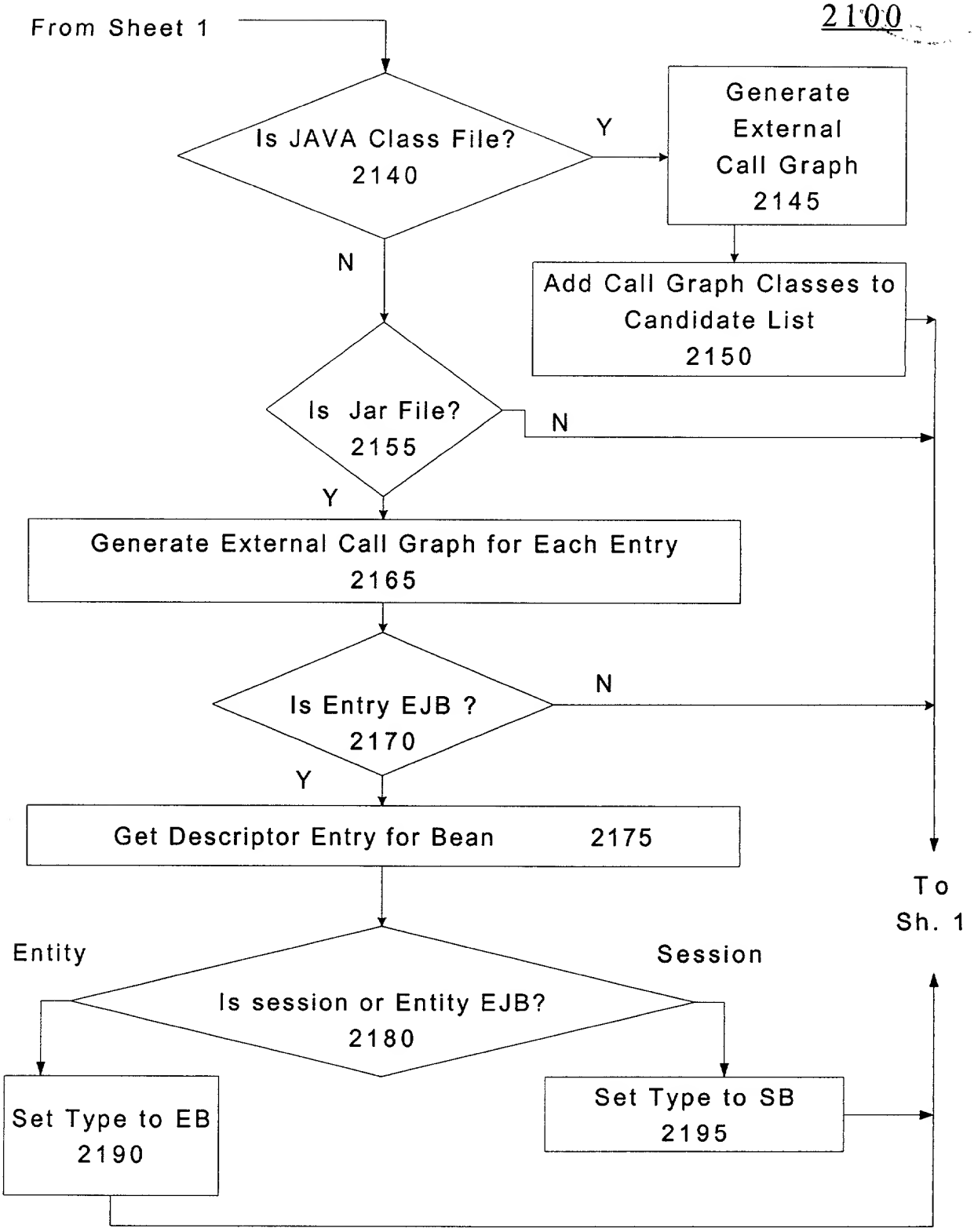
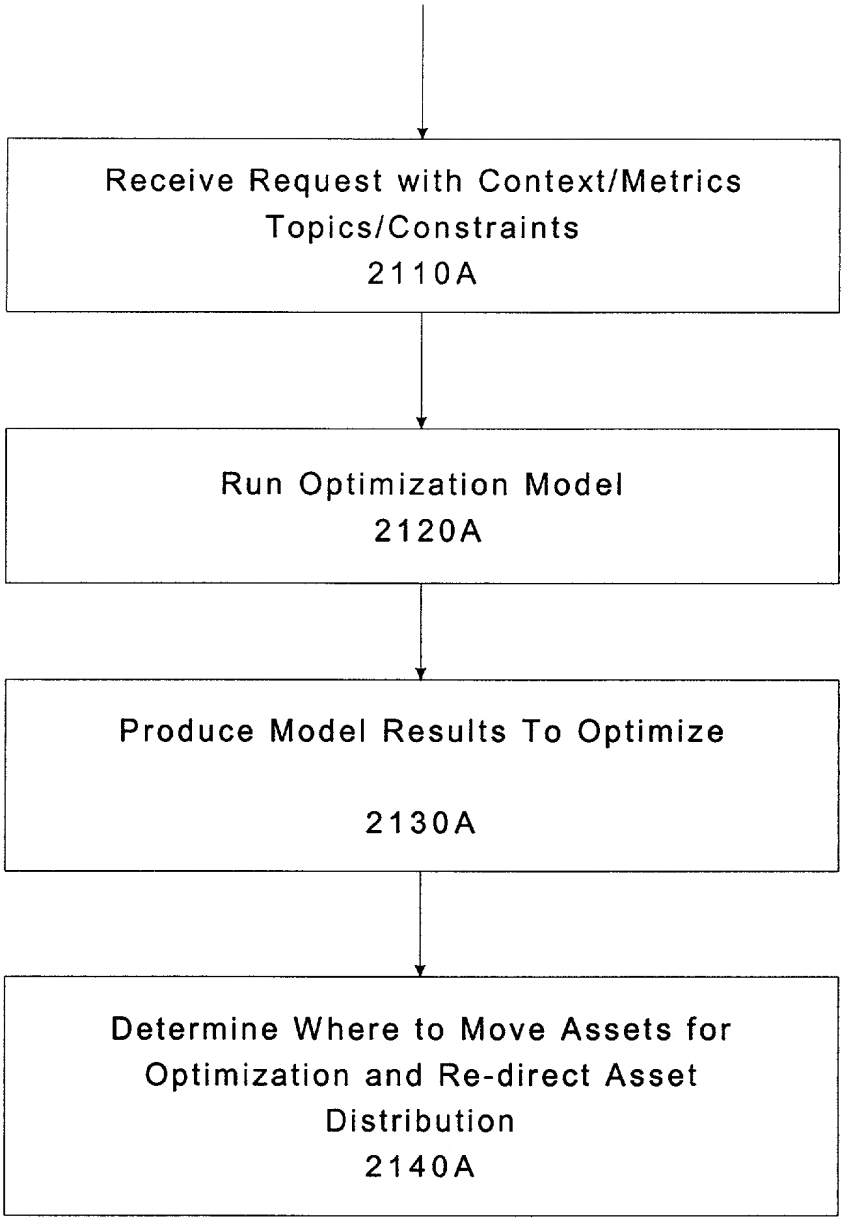


Figure 21-Sheet 2

2100A



Adjustment Asset Adapter Process

Figure 21A

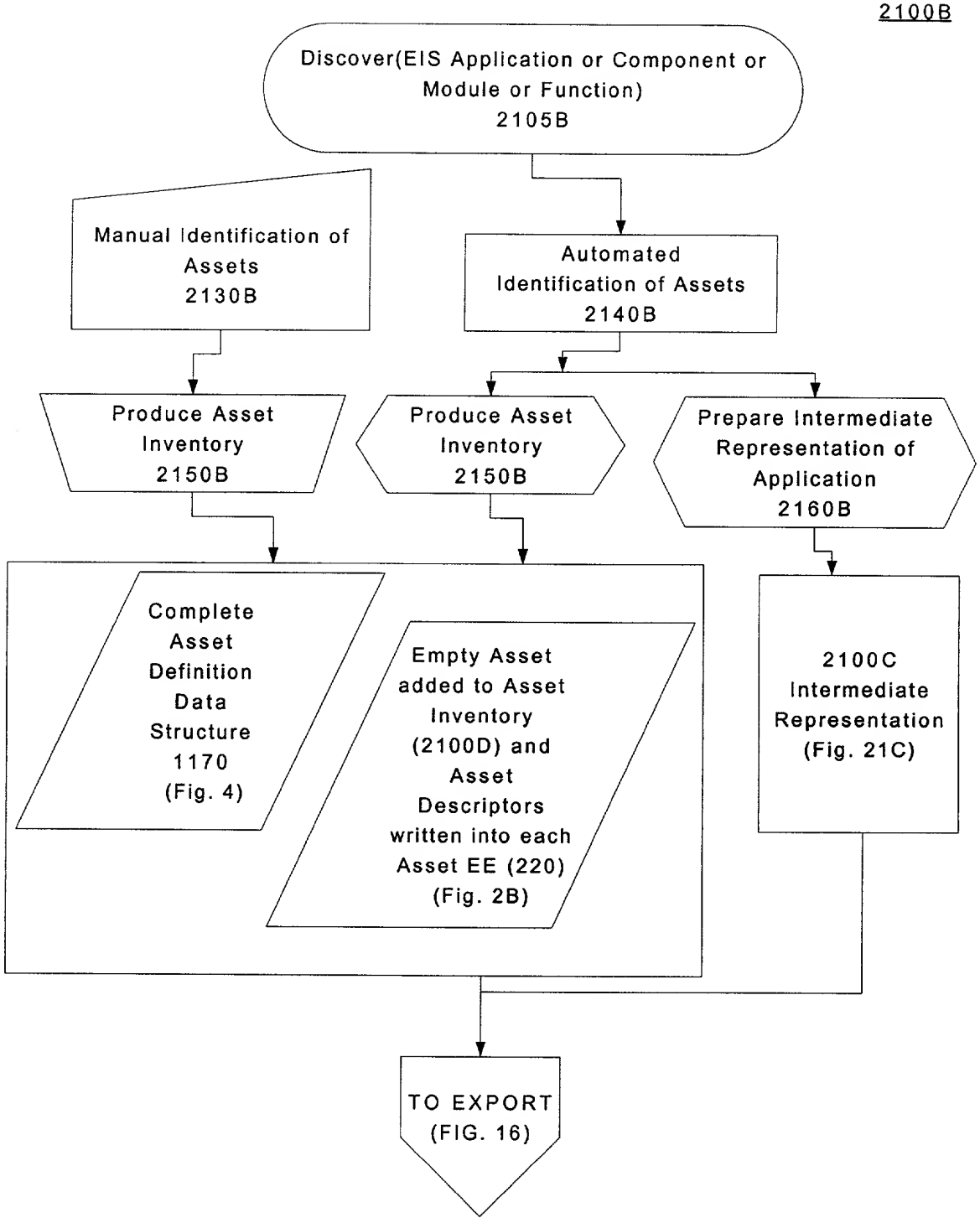
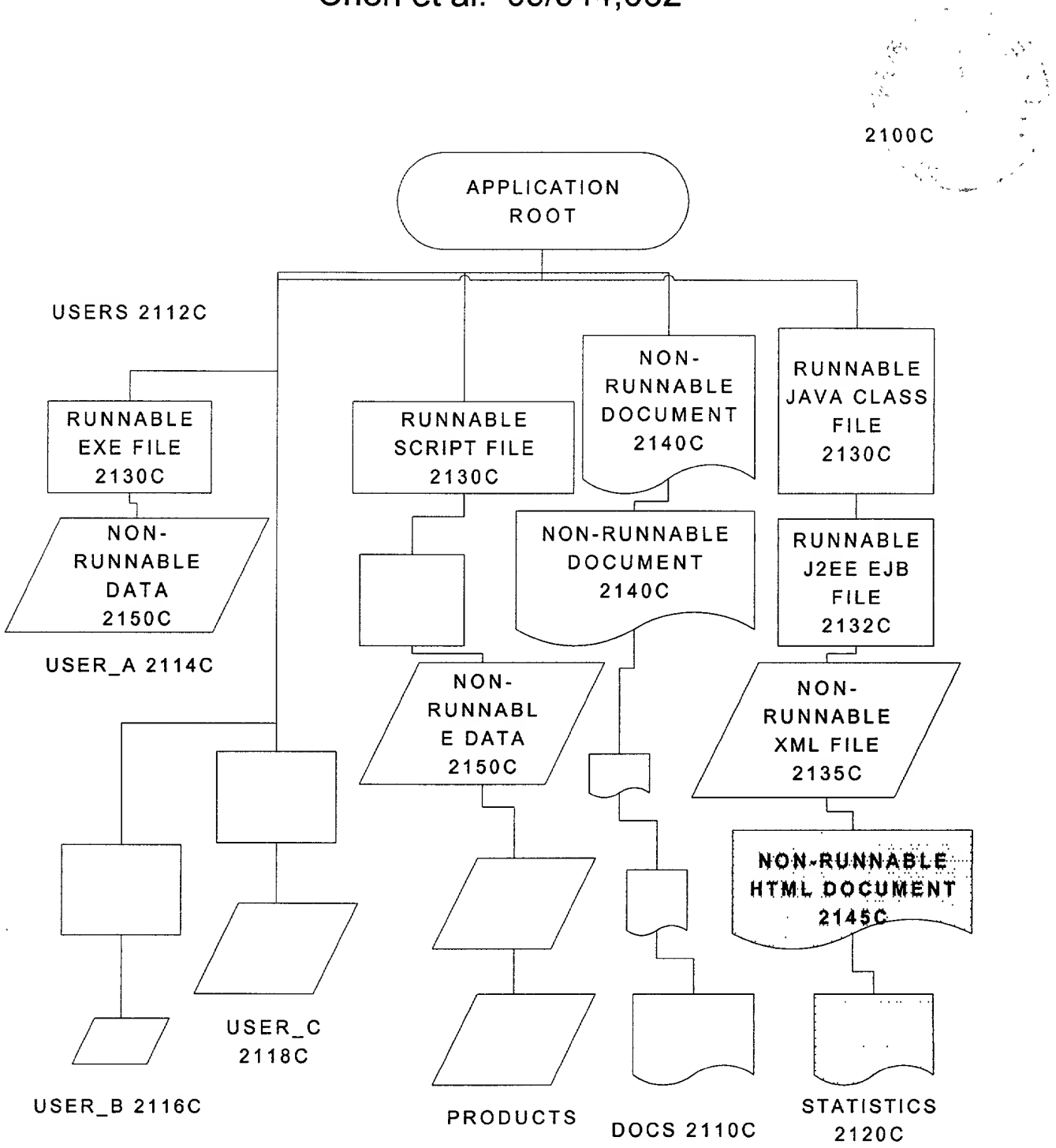

2100B
Discover(EIS Application or Component or Module or Function)
2105B
Manual Identification of Assets
2130B
Automated Identification of Assets
2140B
Produce Asset Inventory
2150B
Produce Asset Inventory
2150B
Prepare Intermediate Representation of Application
2160B
Complete Asset Definition Data Structure
1170
(Fig. 4)
Empty Asset added to Asset Inventory (2100D) and Asset Descriptors written into each Asset EE (220)
(Fig. 2B)
2100C
Intermediate Representation
(Fig. 21C)
TO EXPORT
(FIG. 16)

FIGURE 21B



PRIOR ART

FIGURE 21C

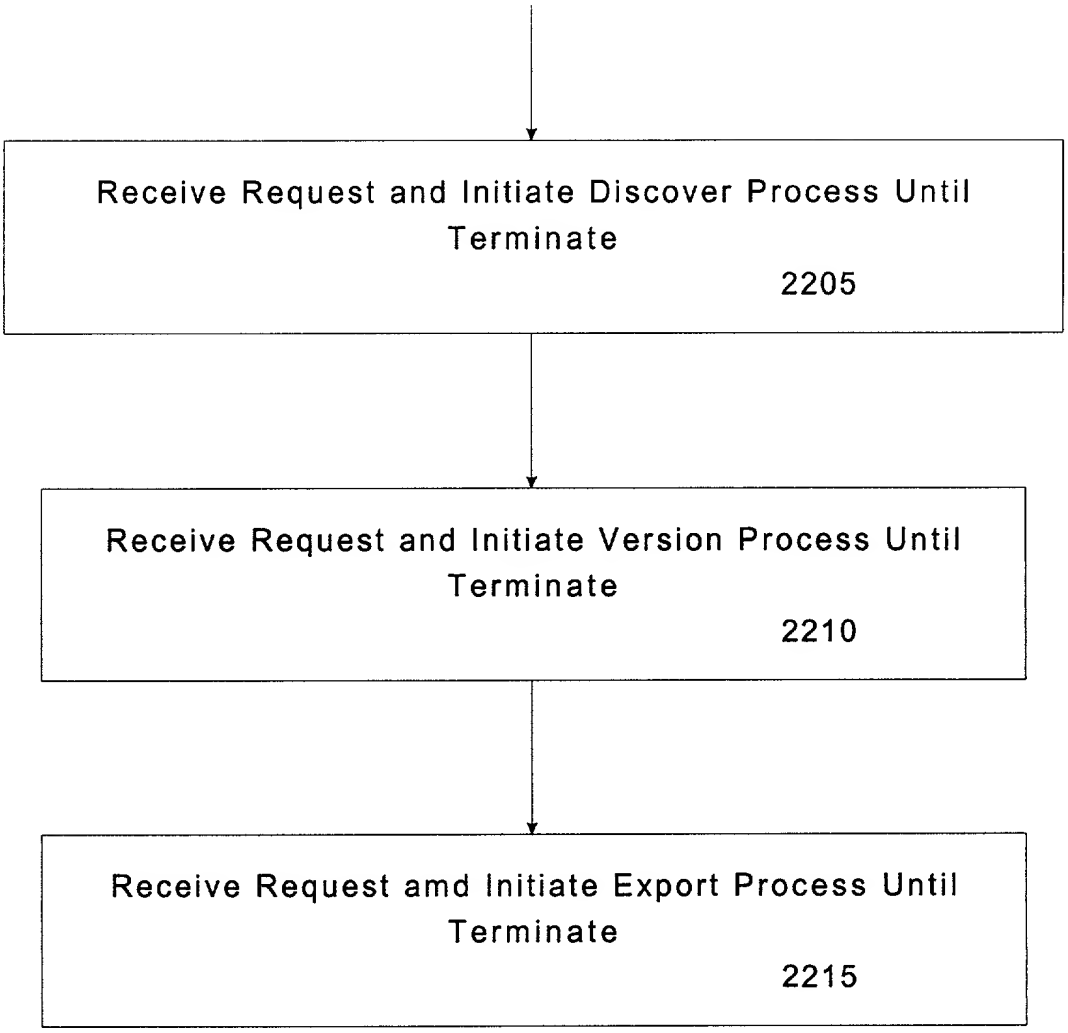
2100D

EE 220	ASSET INTERFACE 230 (OPTIONAL)	LOGIC/DATA (LD) 210
EE 220	ASSET INTERFACE 230 (OPTIONAL)	LOGIC/DATA (LD) 210
EE 220	ASSET INTERFACE 230 (OPTIONAL)	LOGIC/DATA (LD) 210
EE 220	ASSET INTERFACE 230 (OPTIONAL)	LOGIC/DATA (LD) 210
EE 220	ASSET INTERFACE 230 (OPTIONAL)	LOGIC/DATA (LD) 210
EE 220	ASSET INTERFACE 230 (OPTIONAL)	LOGIC/DATA (LD) 210
EE 220	ASSET INTERFACE 230 (OPTIONAL)	LOGIC/DATA (LD) 210

•
•
•

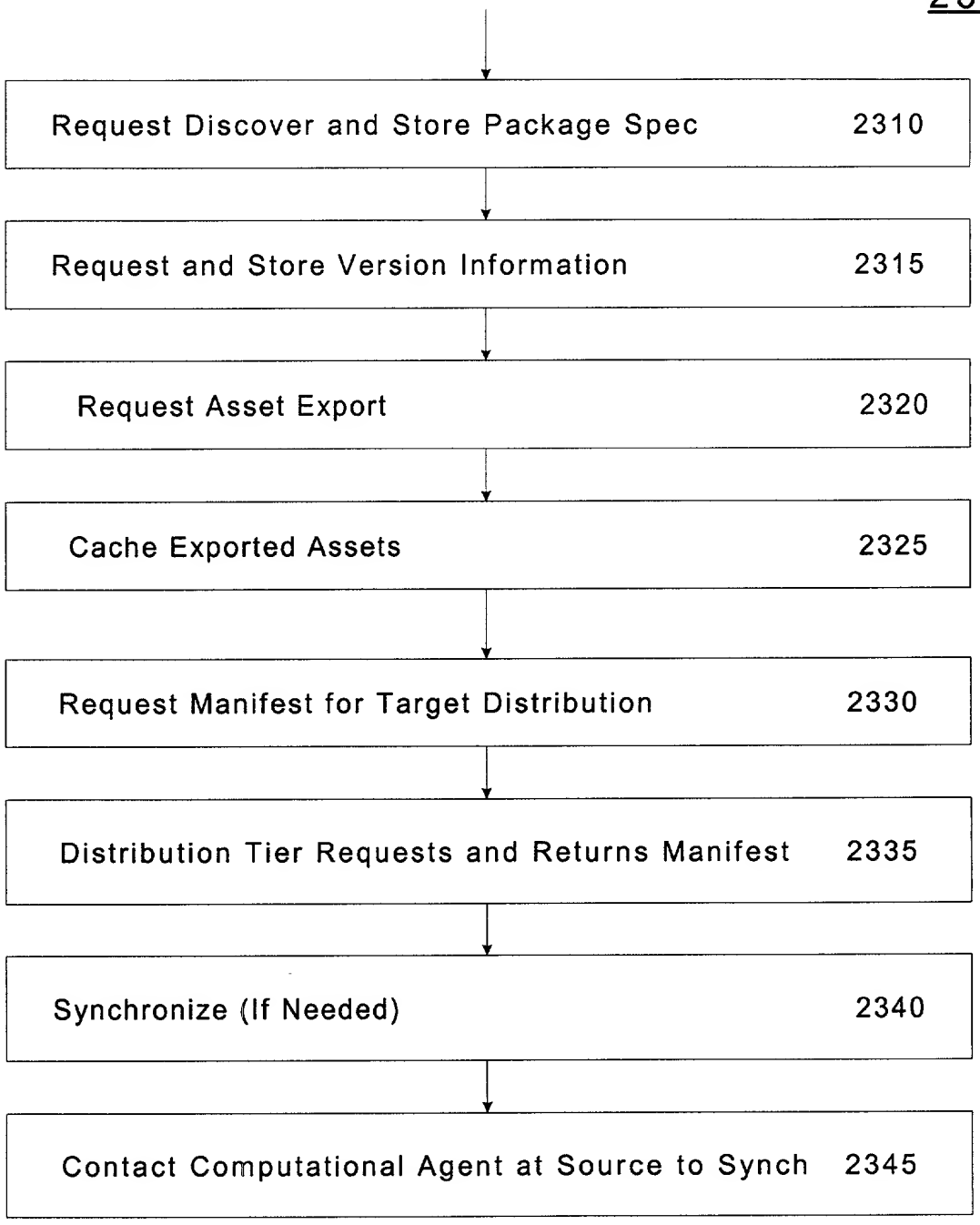
FIGURE 21D

2200



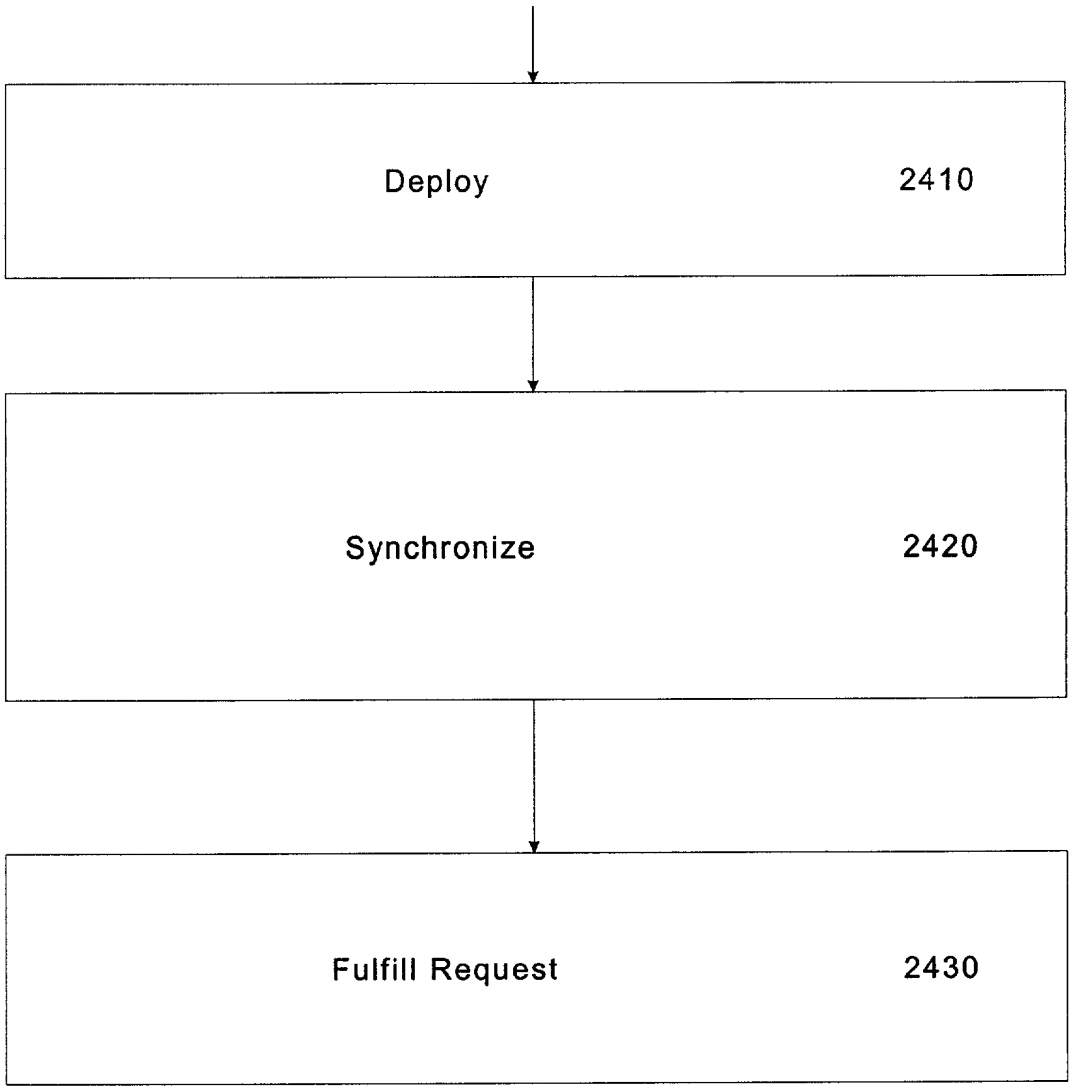
Publishing Agent Method

Figure 22



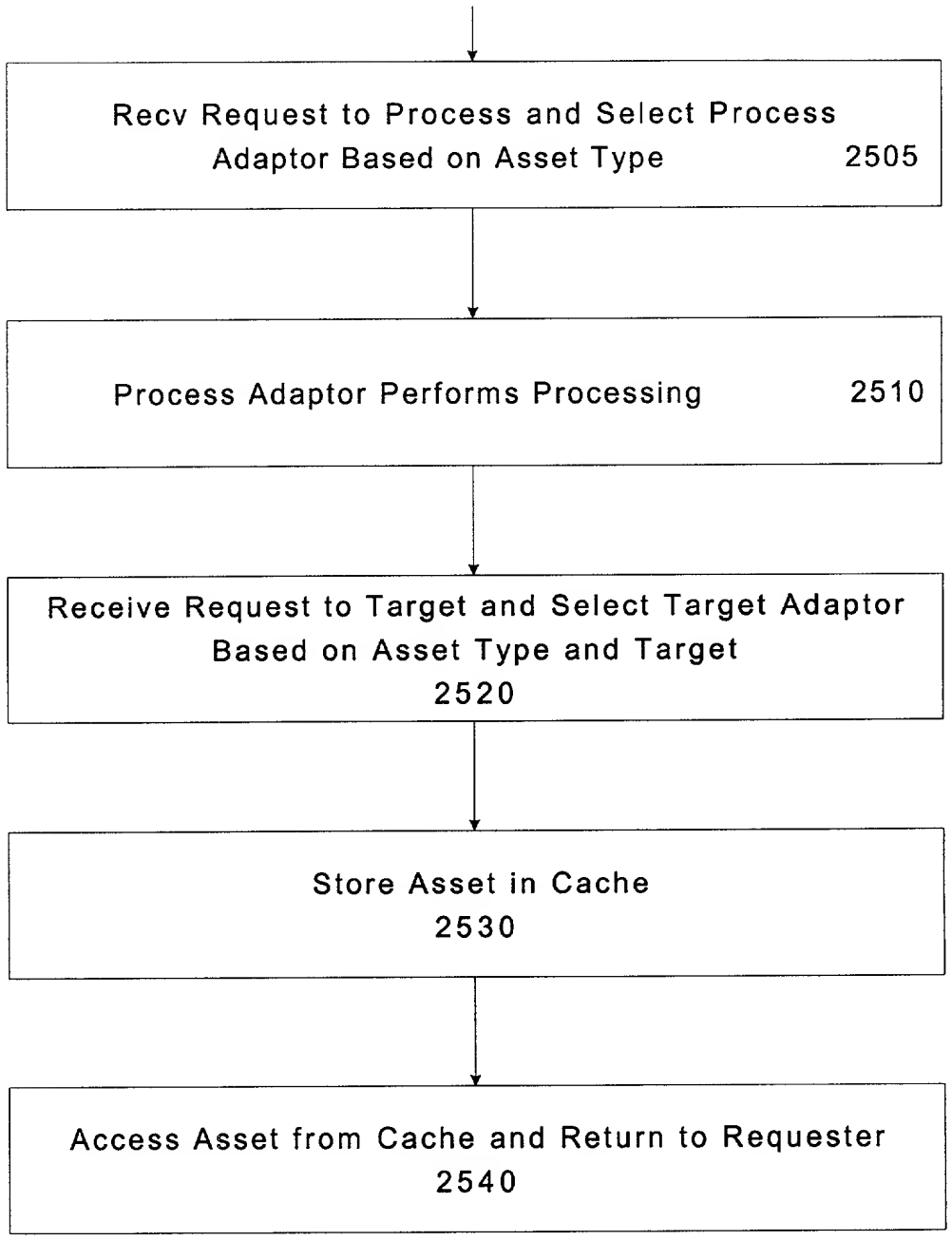
Subscriber Agent Method

Figure 23



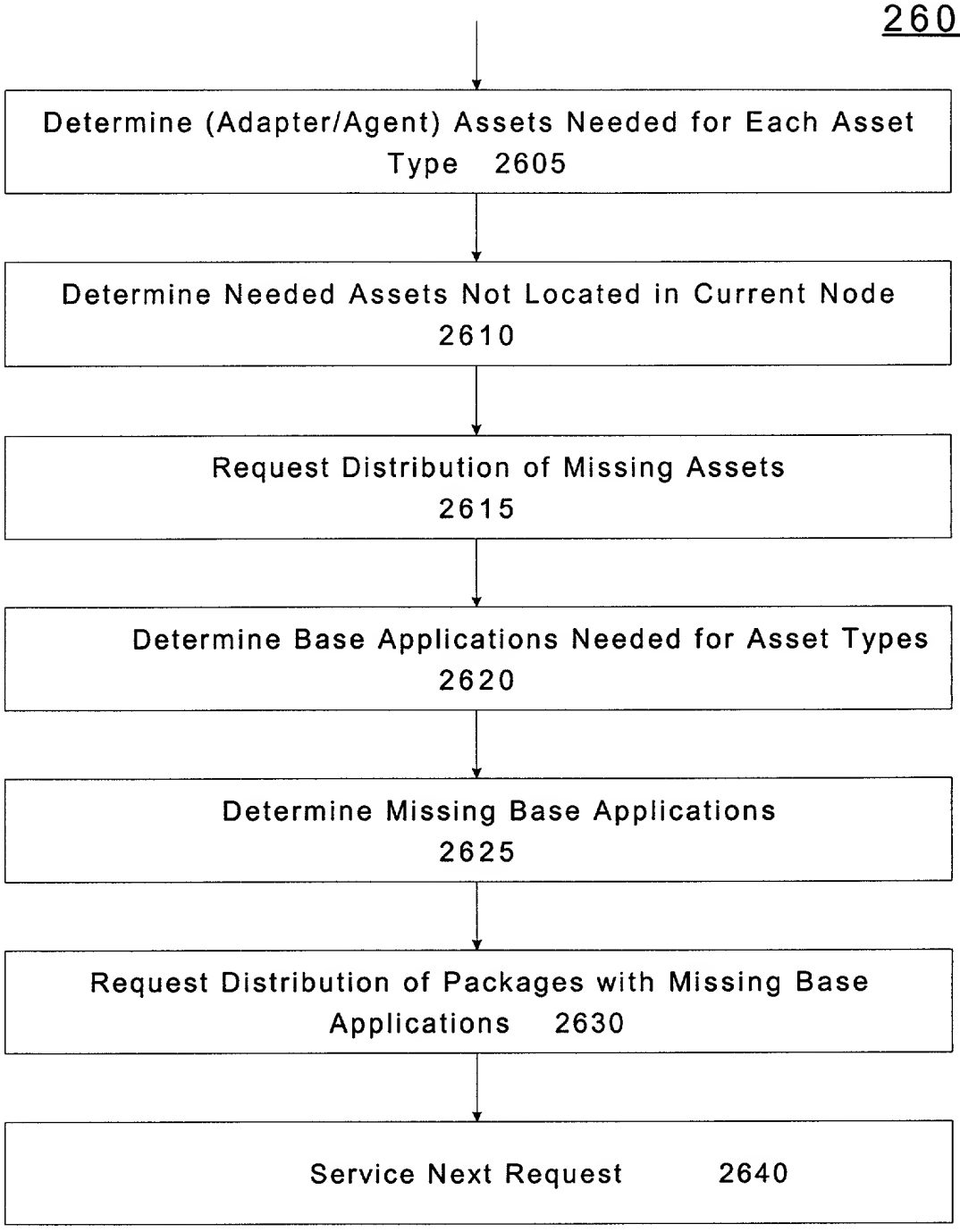
Computational Agent Method

Figure 24



Caching Agent Method

Figure 25



System Asset Distribution Process

Figure 26

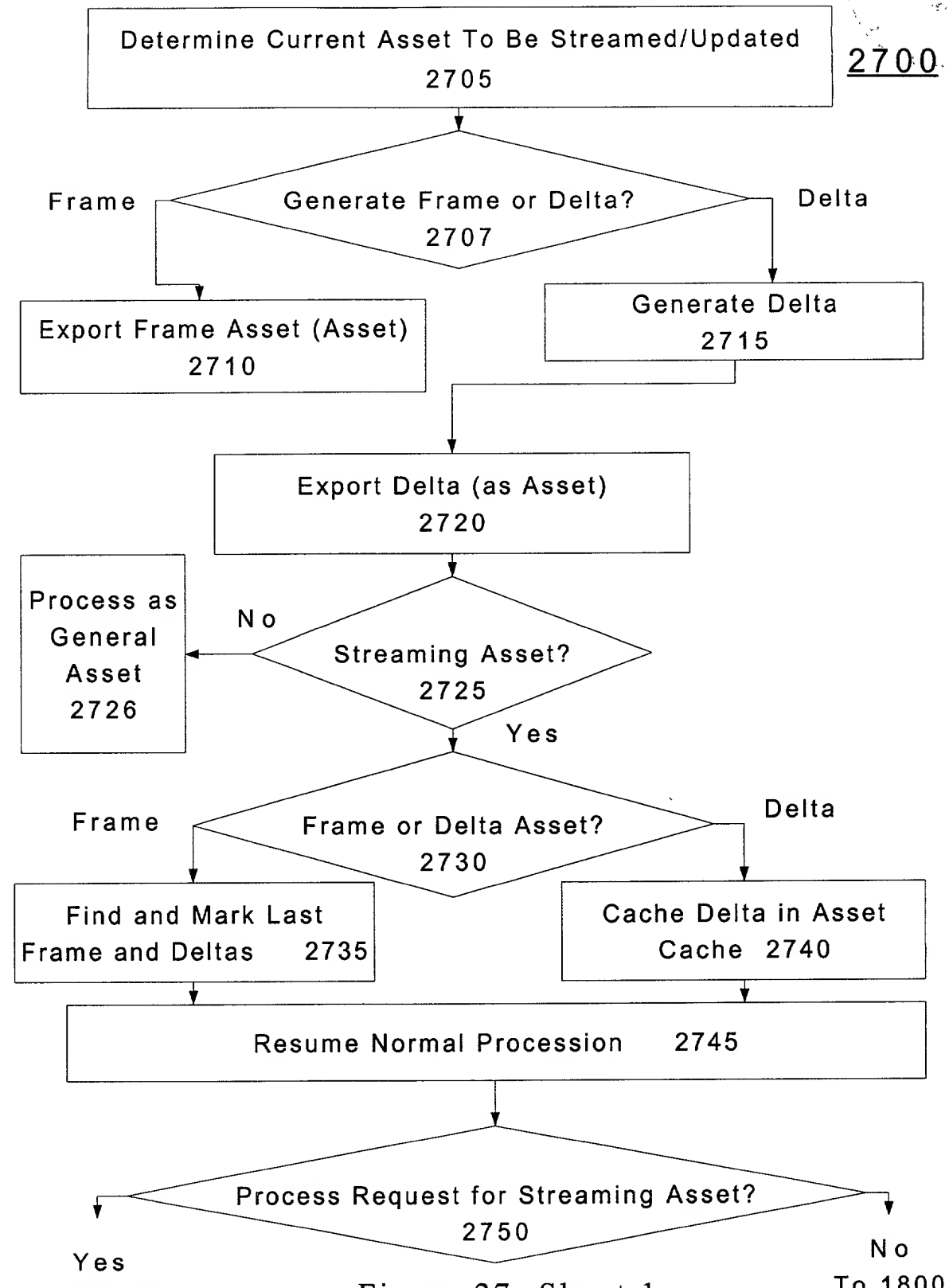


Figure 27- Sheet 1

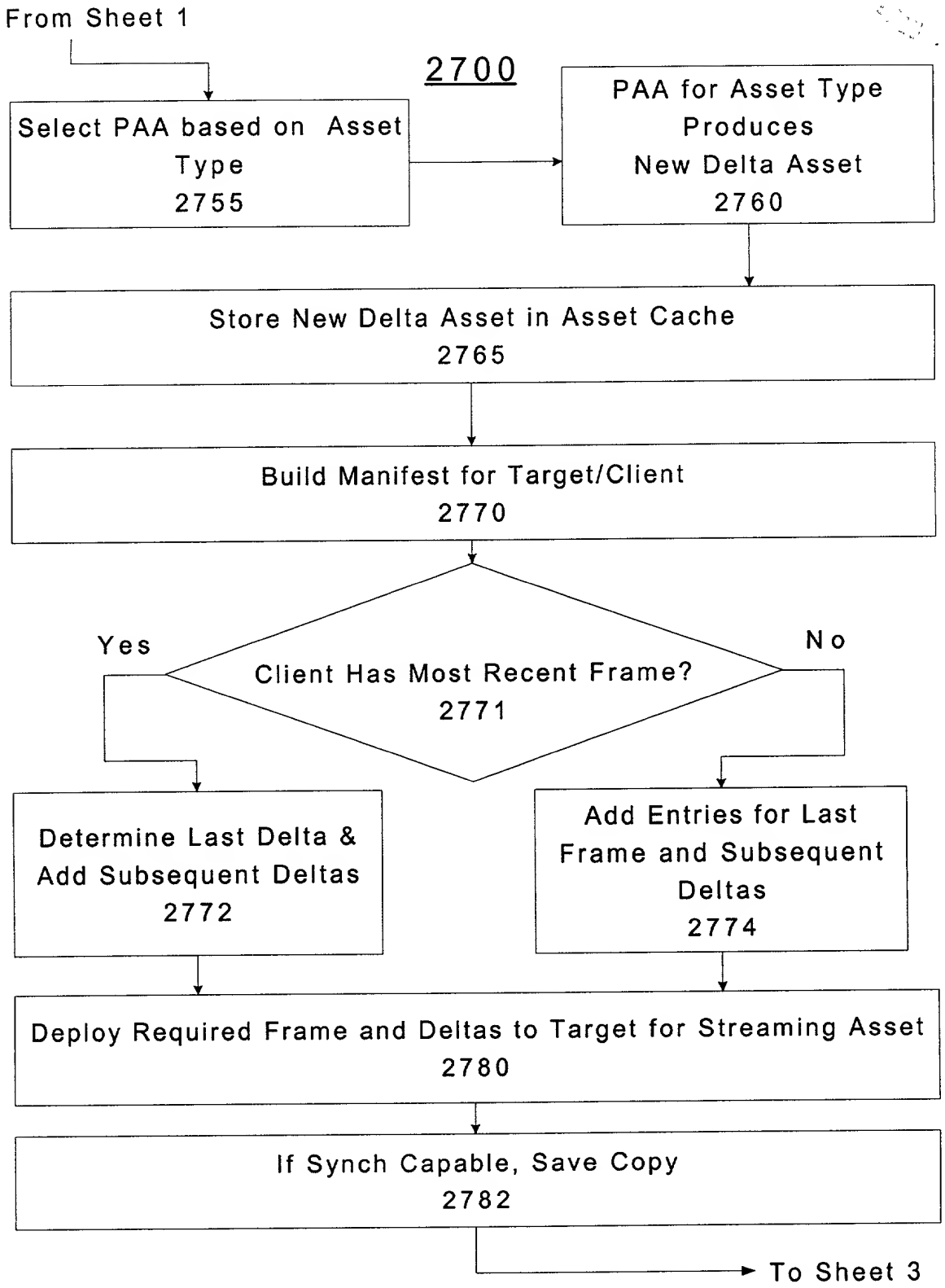


Figure 27-Sheet 2

2700

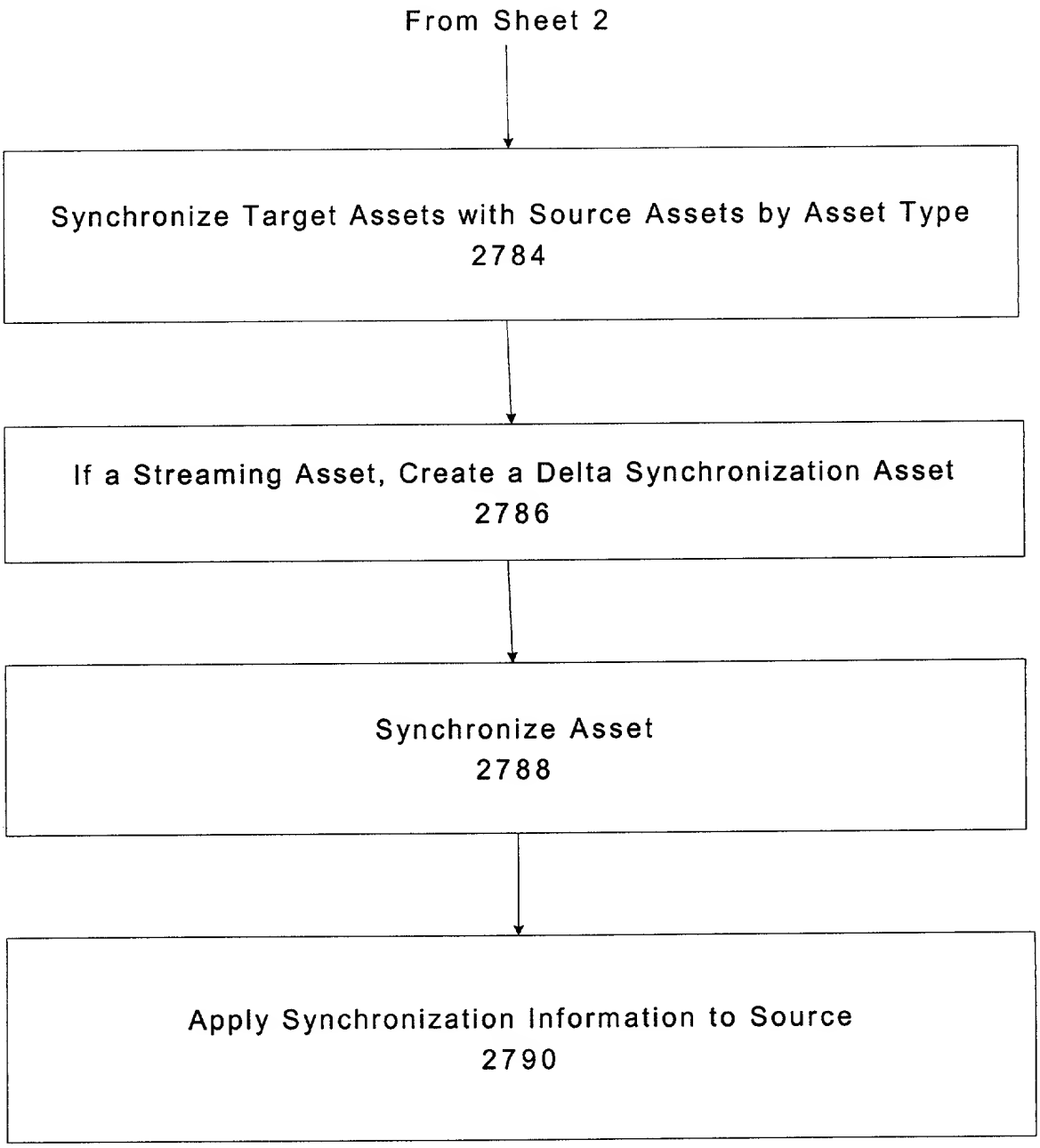
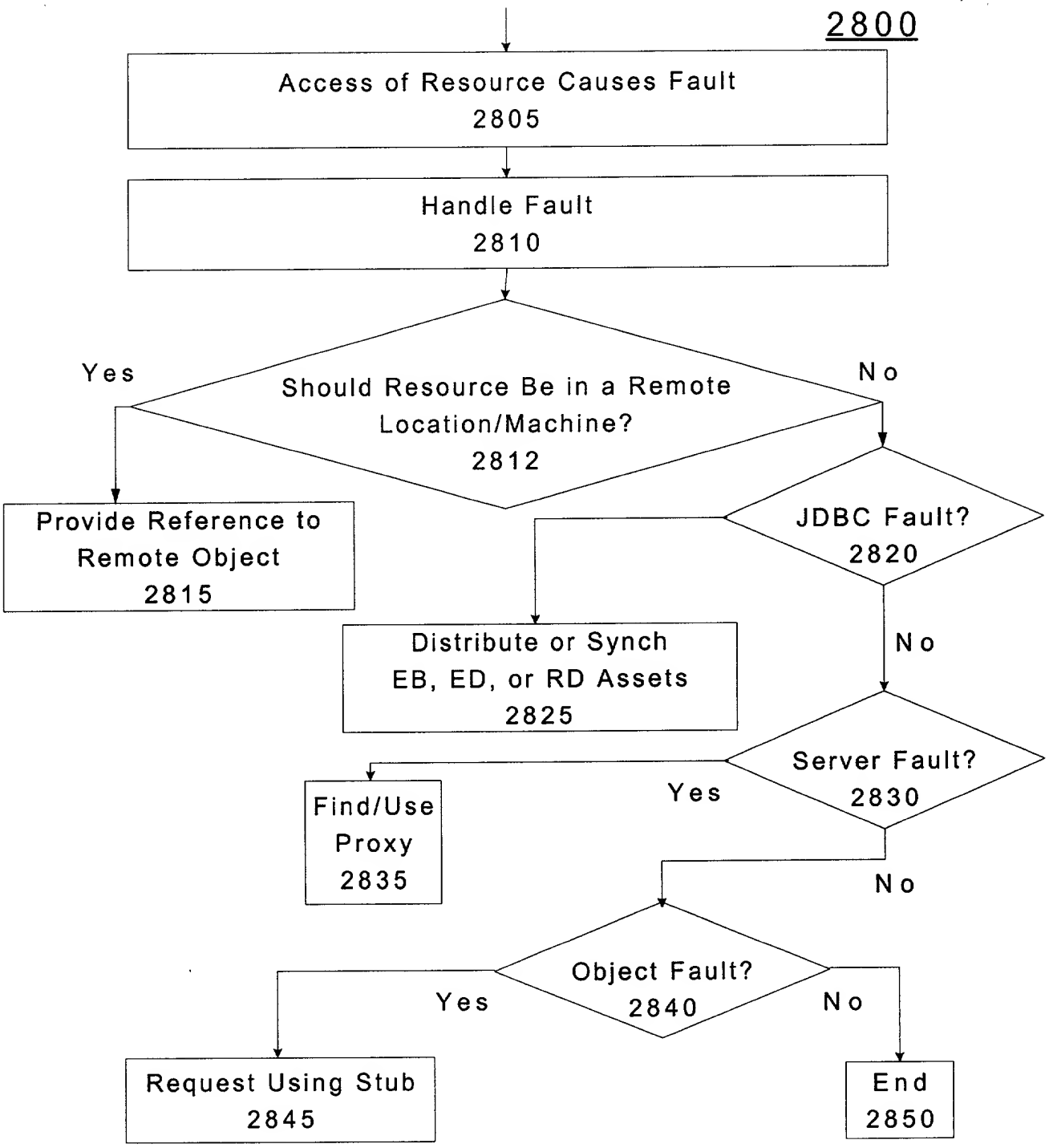


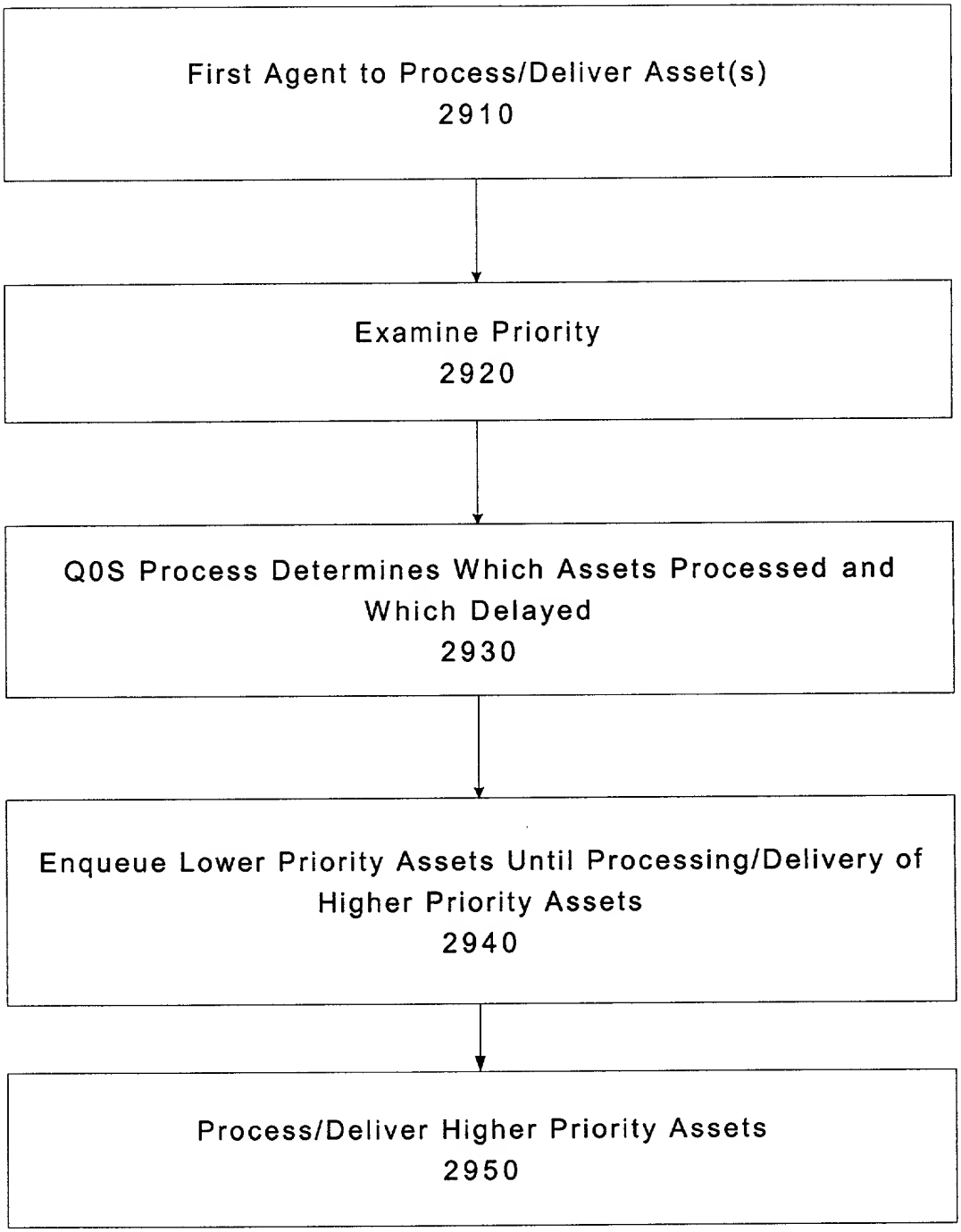
Figure 27-Sheet 3



Bridging Process

Figure 28

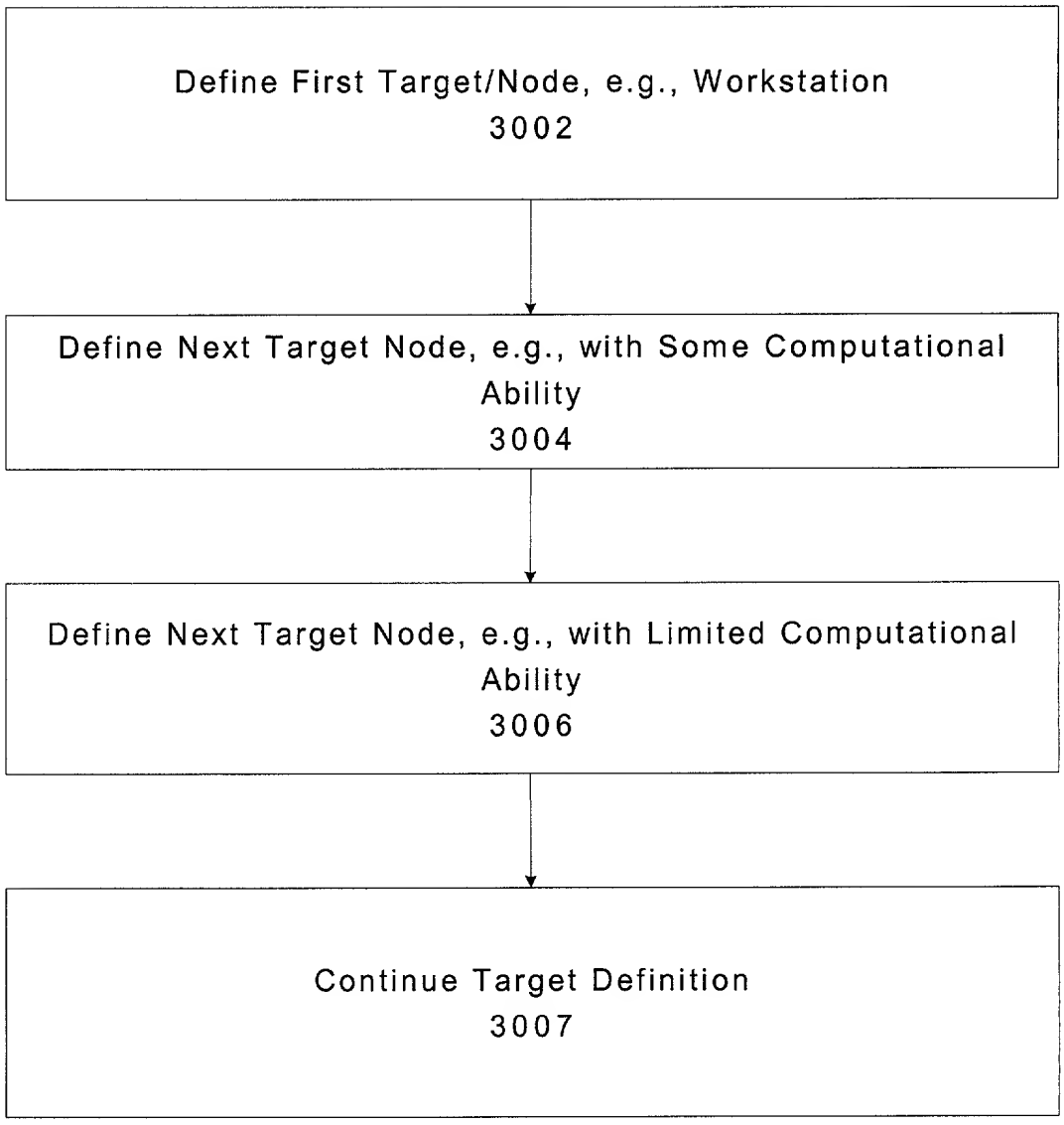
2900



QoS

Figure 29

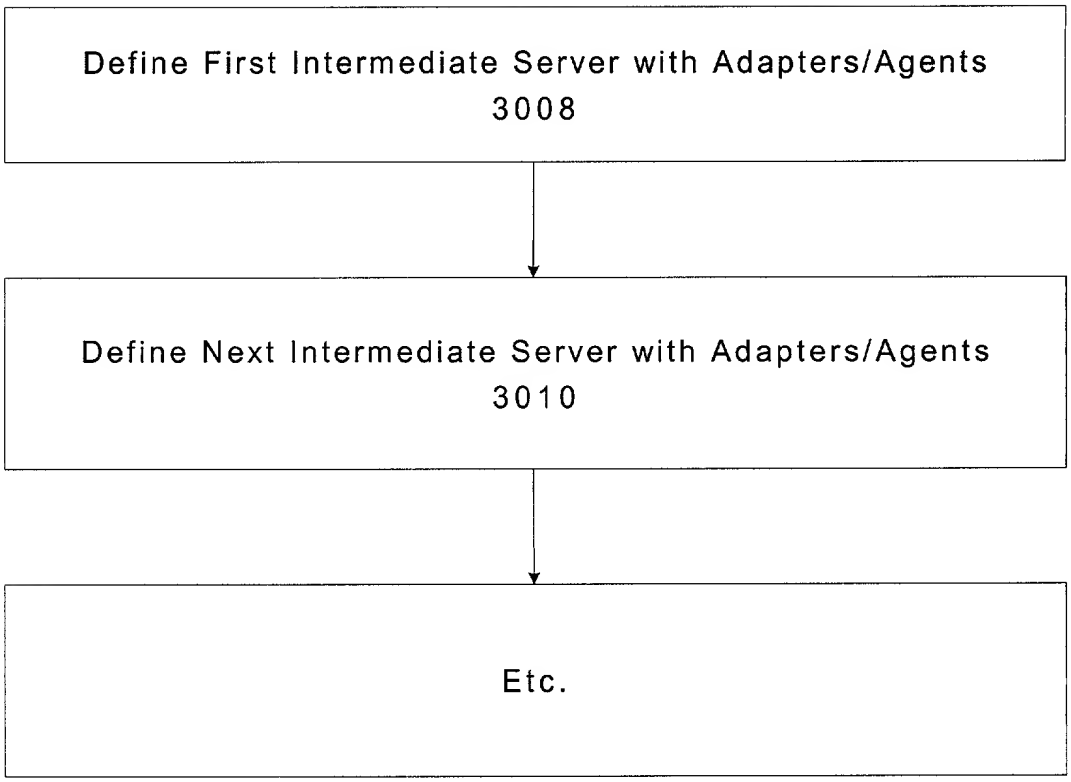
3000A



Target/Client Definition

Figure 30A

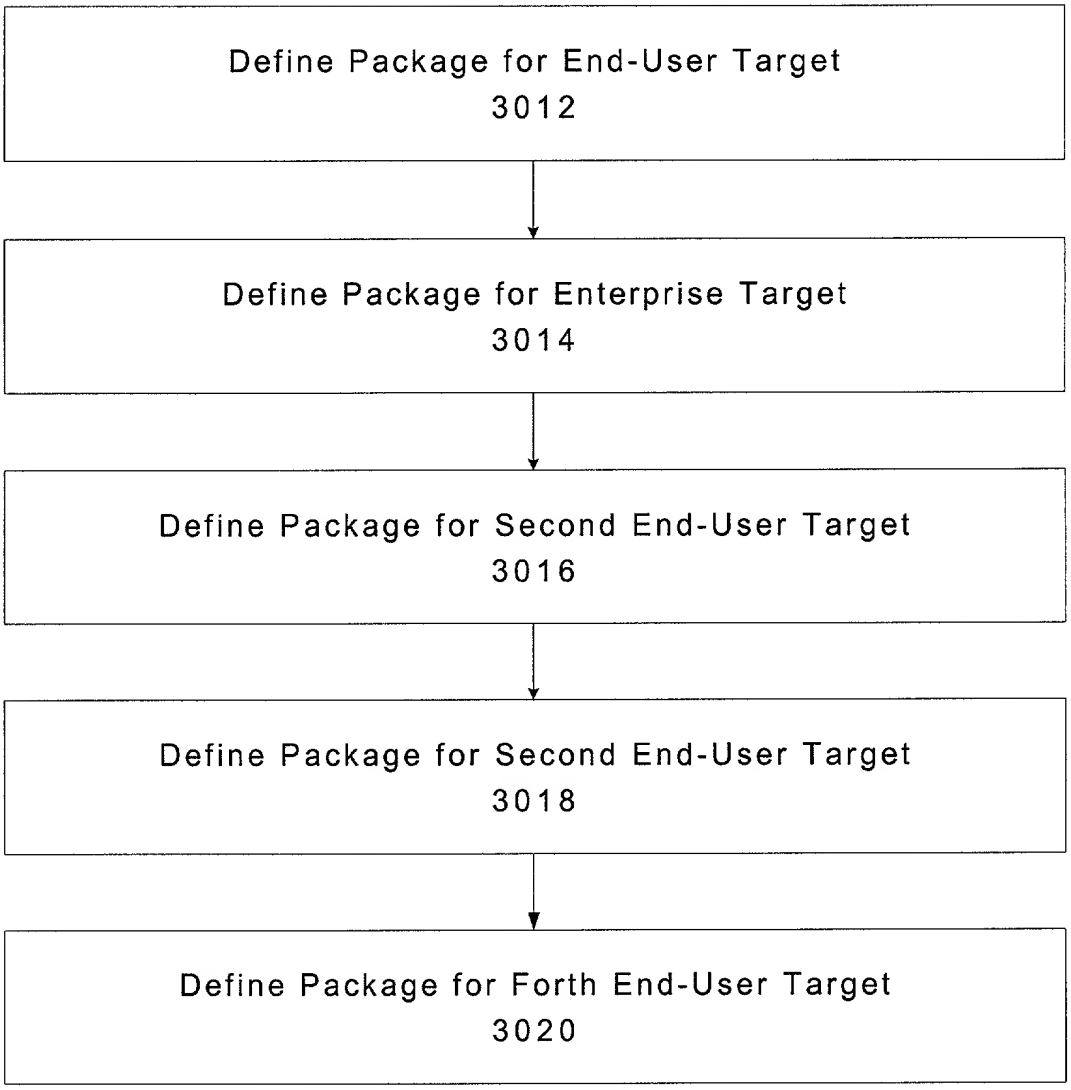
3000B



Server Definition

Figure 30B

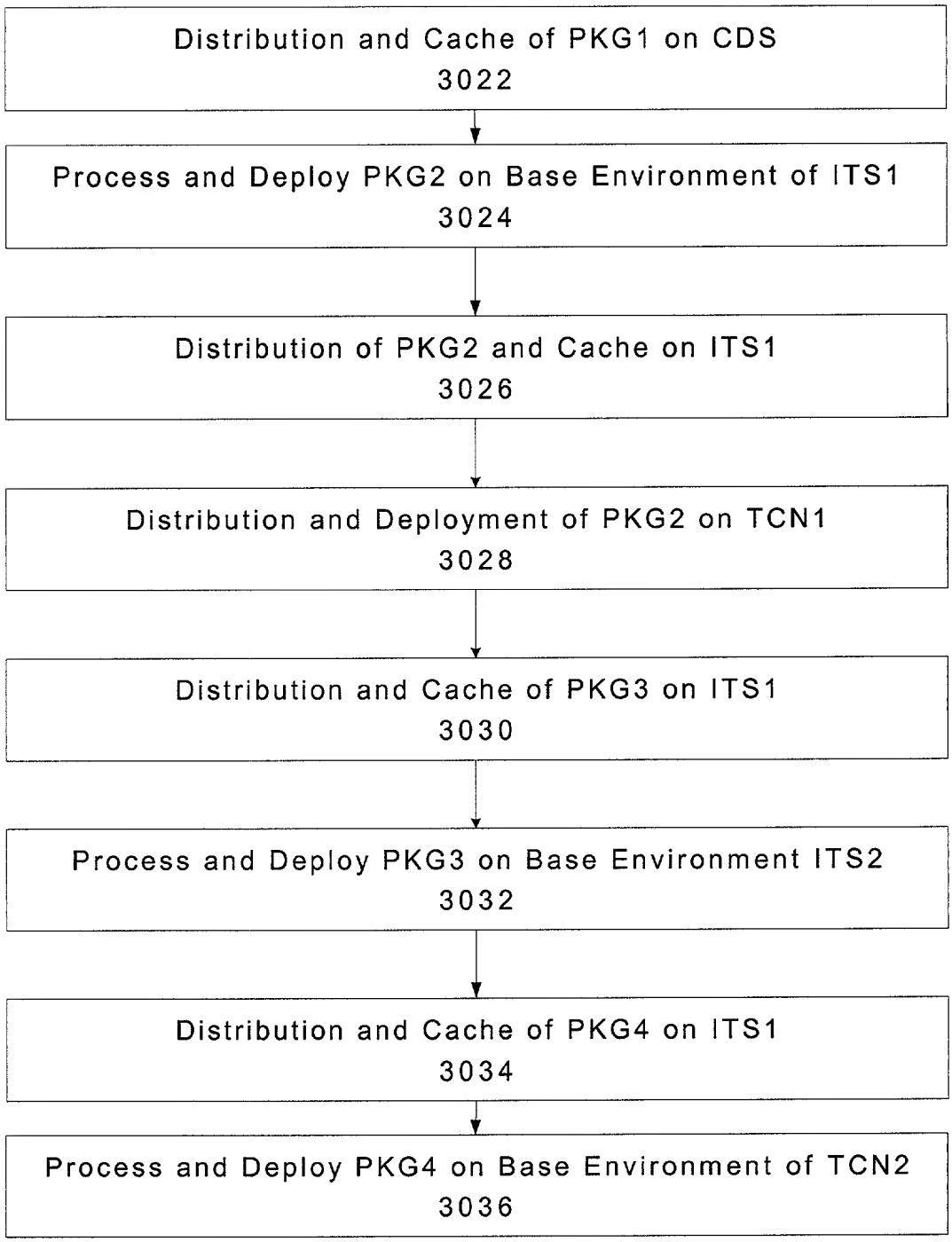
3000C



Define Packages/Applications

Figure 30C

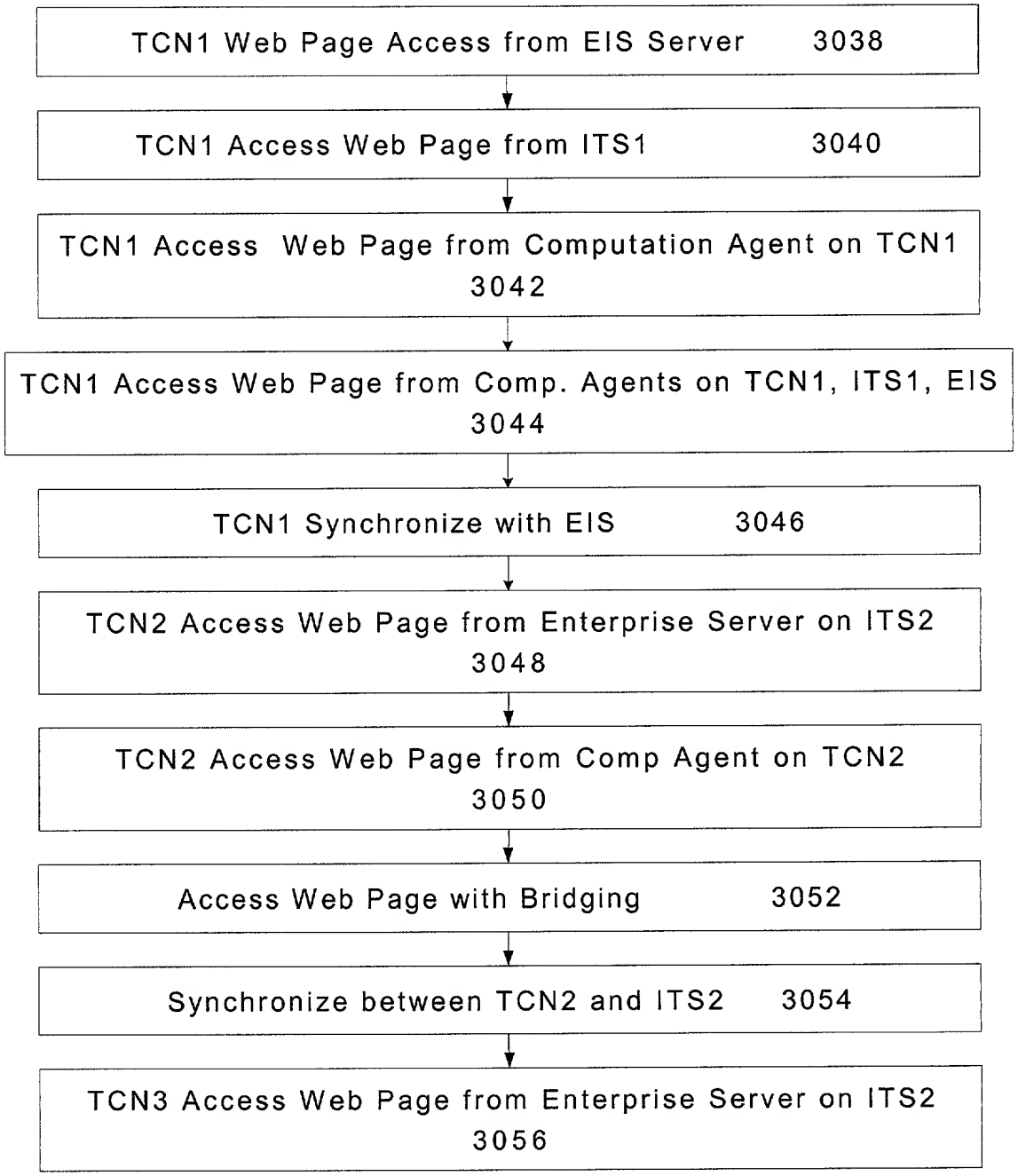
3000D



Distributing to Computational Environments

Figure 30D

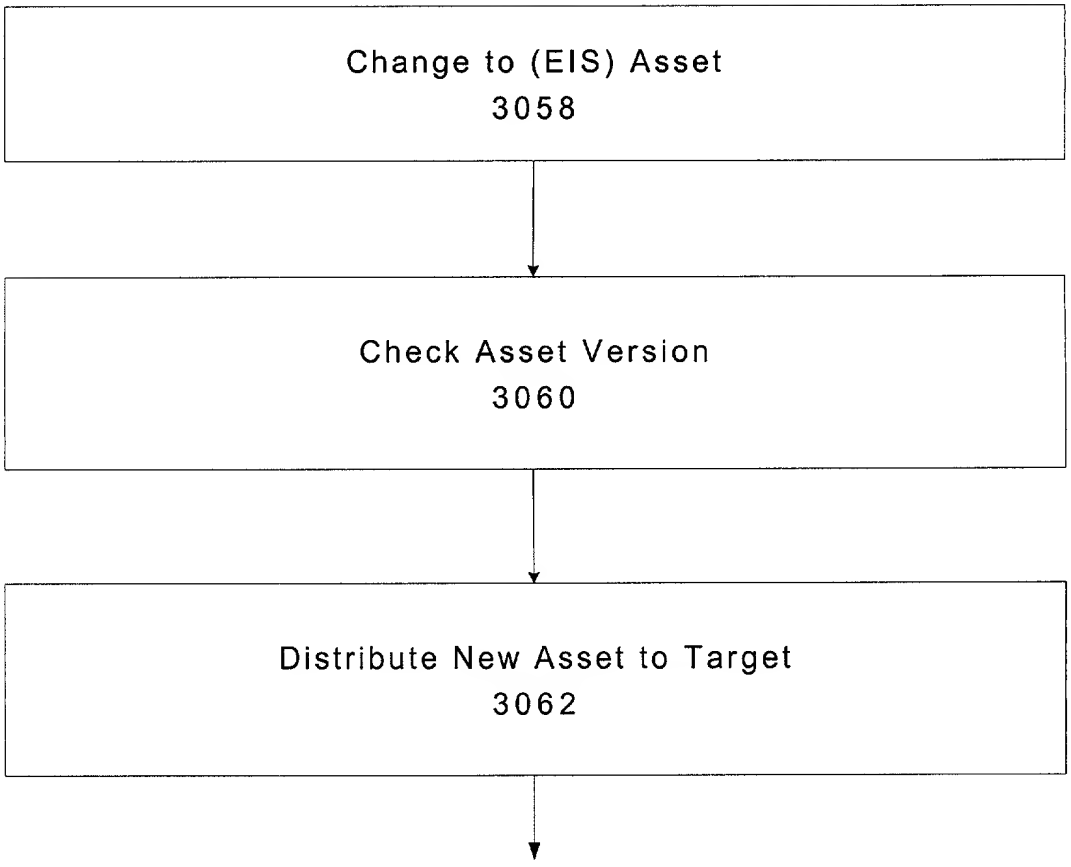
3000E



Distributed Execution of Assets

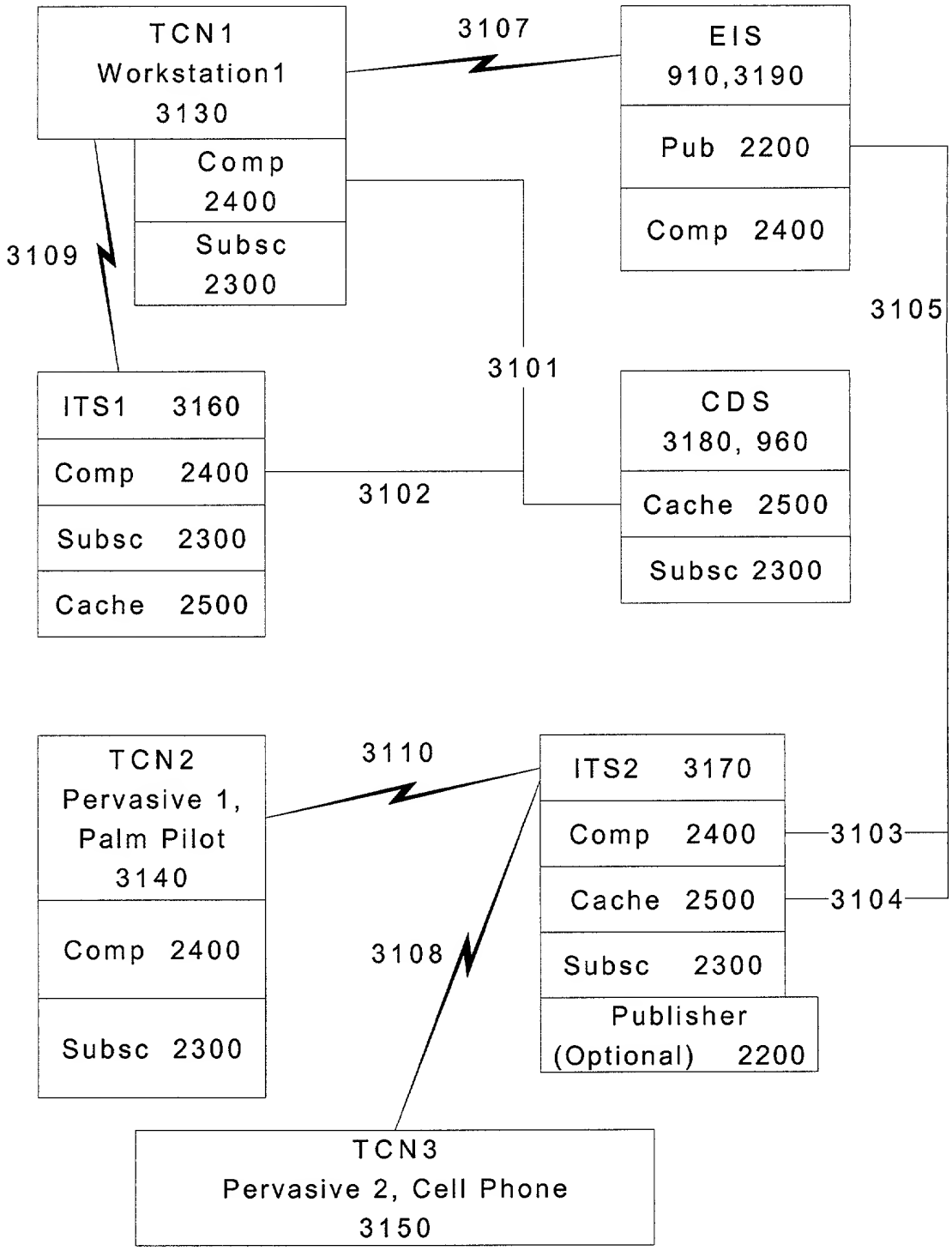
Figure 30E

3000F



Distribution of Current Assets

Figure 30F



Example Network Connections and Asset Distribution

Figure 31

3200

INPUT

OUTPUT

DATABASE ACCESS

BOUNDRY OF TRANSACTIONAL UNIT OF WORK

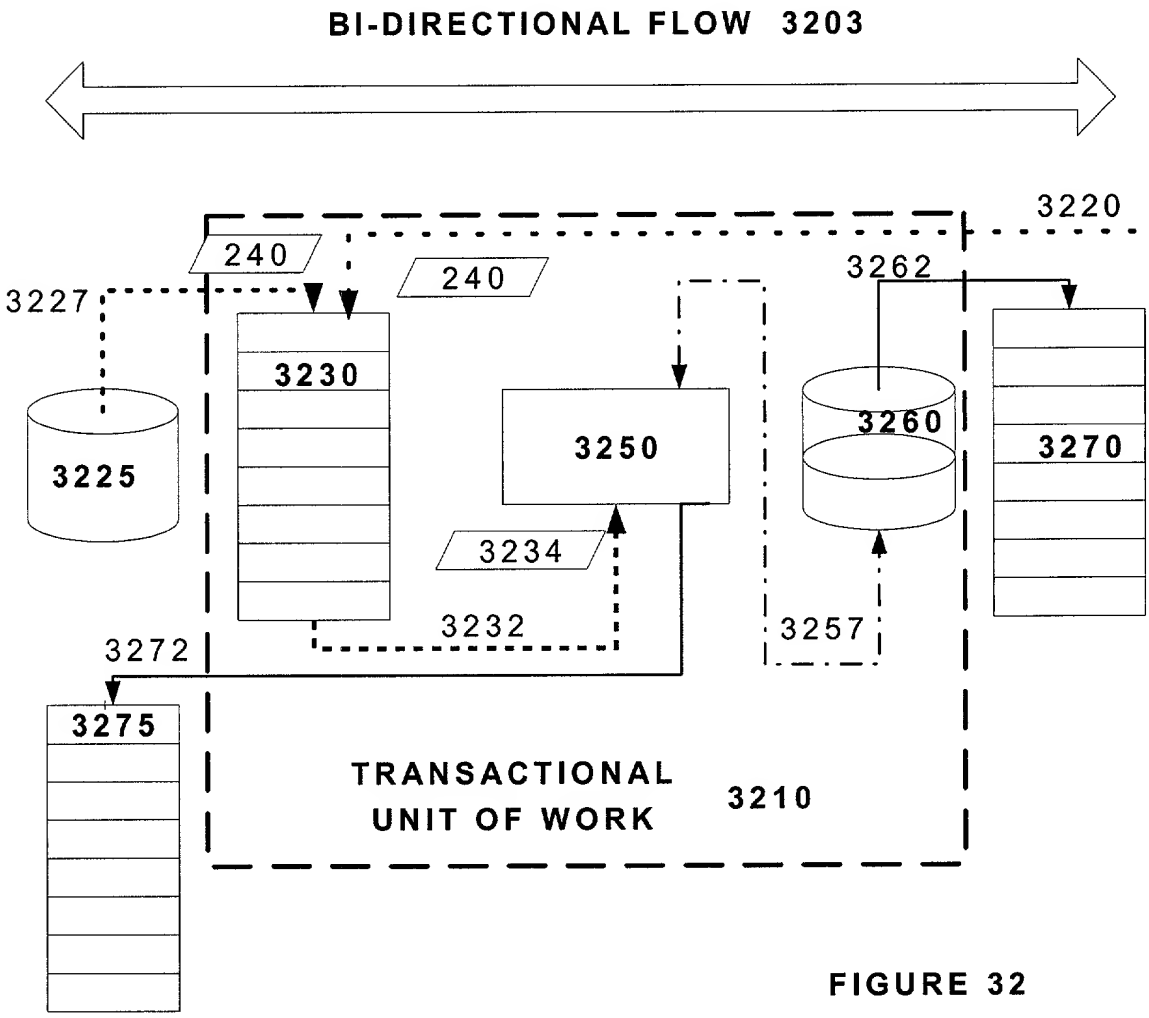


FIGURE 32

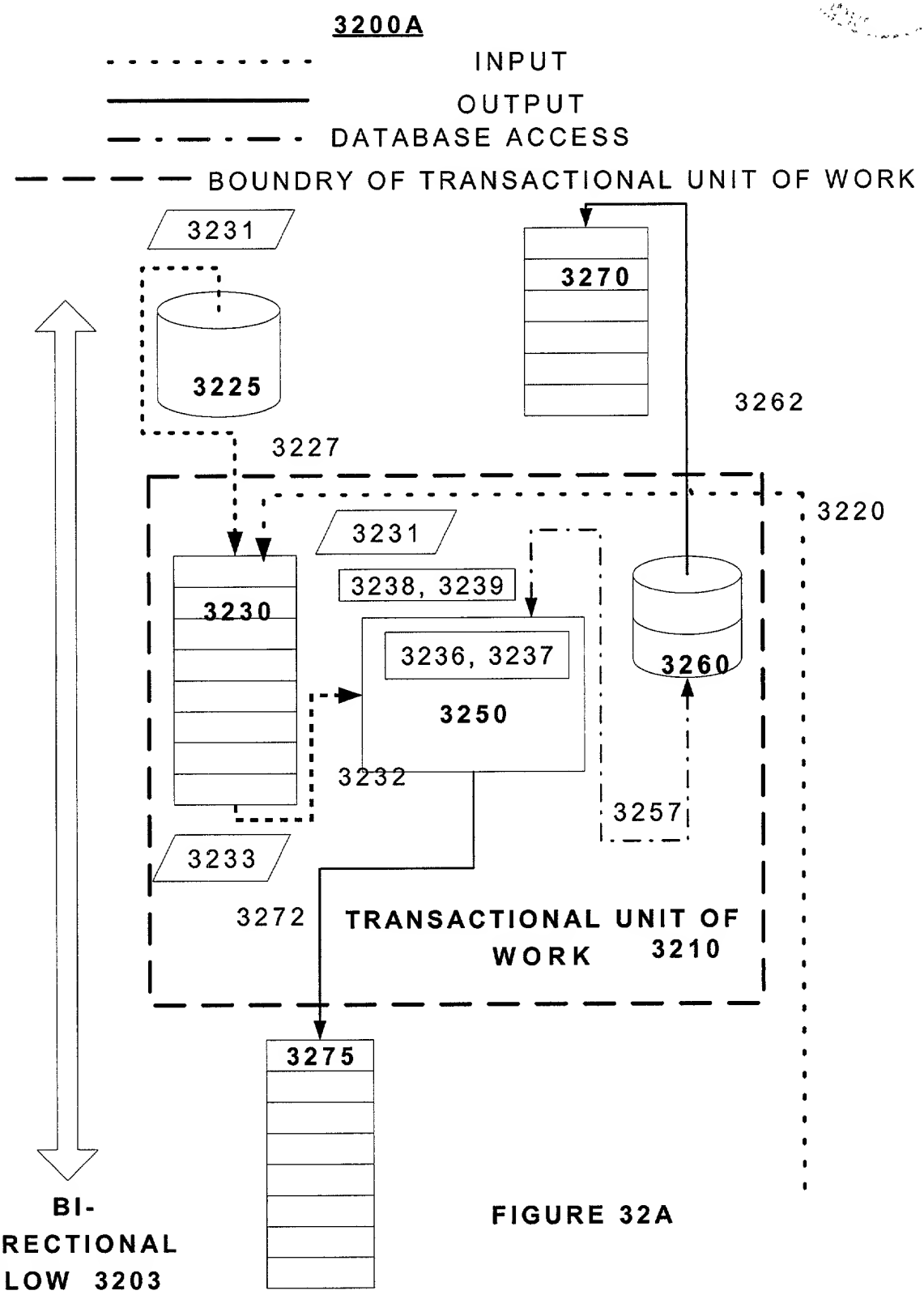

3200A
INPUT
OUTPUT
DATABASE ACCESS
BOUNDRY OF TRANSACTIONAL UNIT OF WORK
3231
3225
3270
3262
3227
3220
3231
3238, 3239
3230
3236, 3237
3250
3260
3232
3257
3233
3272
TRANSACTIONAL UNIT OF WORK 3210
3275
BI-DIRECTIONAL FLOW 3203

FIGURE 32A

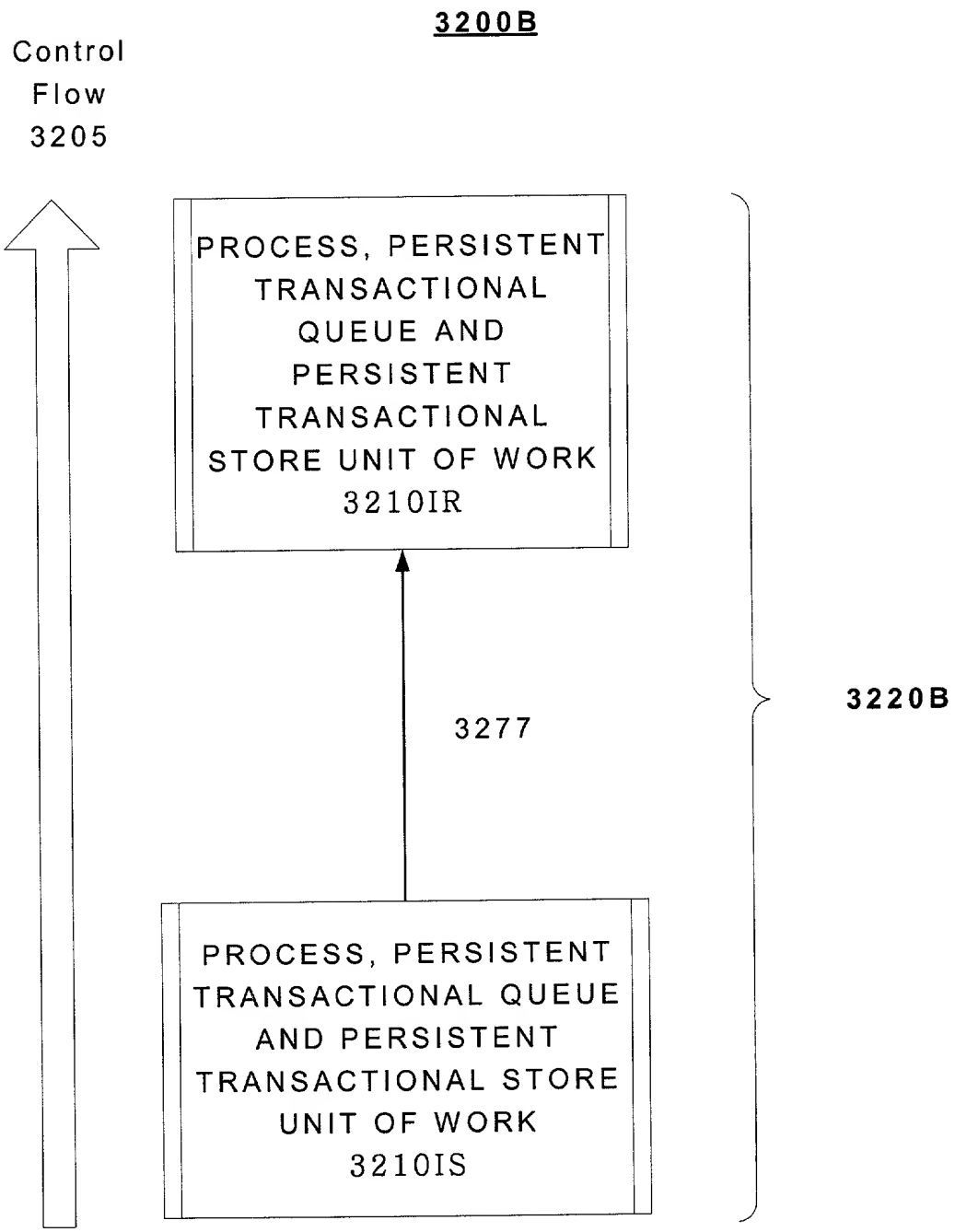

3200B
Control Flow 3205
PROCESS, PERSISTENT TRANSACTIONAL QUEUE AND PERSISTENT TRANSACTIONAL STORE UNIT OF WORK 3210IR
3277
PROCESS, PERSISTENT TRANSACTIONAL QUEUE AND PERSISTENT TRANSACTIONAL STORE UNIT OF WORK 3210IS
3220B

FIGURE 32B

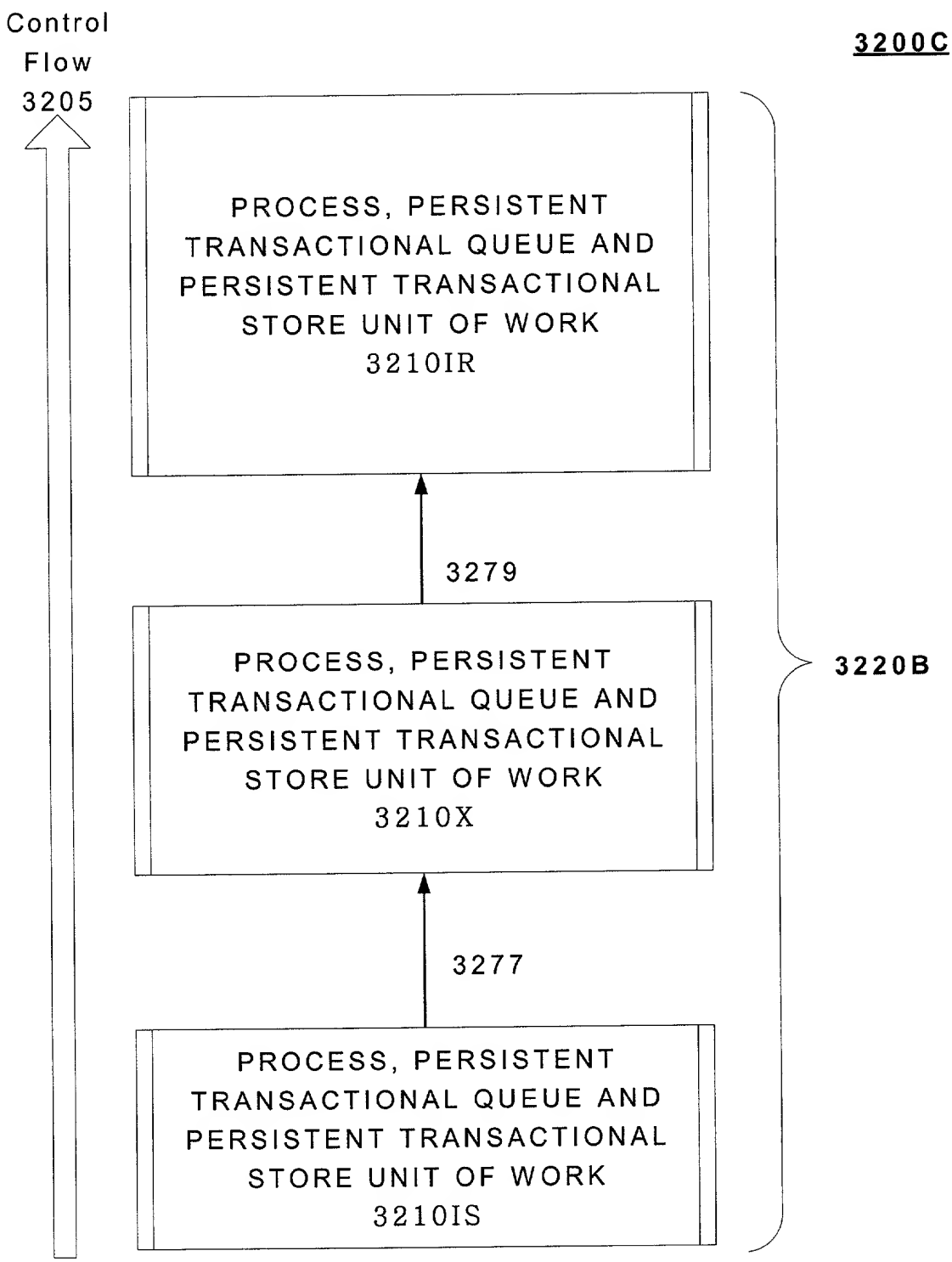

Control
Flow
3205
3200C
PROCESS, PERSISTENT TRANSACTIONAL QUEUE AND PERSISTENT TRANSACTIONAL STORE UNIT OF WORK 3210IR
3279
PROCESS, PERSISTENT TRANSACTIONAL QUEUE AND PERSISTENT TRANSACTIONAL STORE UNIT OF WORK 3210X
3277
PROCESS, PERSISTENT TRANSACTIONAL QUEUE AND PERSISTENT TRANSACTIONAL STORE UNIT OF WORK 3210IS
3220B

FIGURE 32C

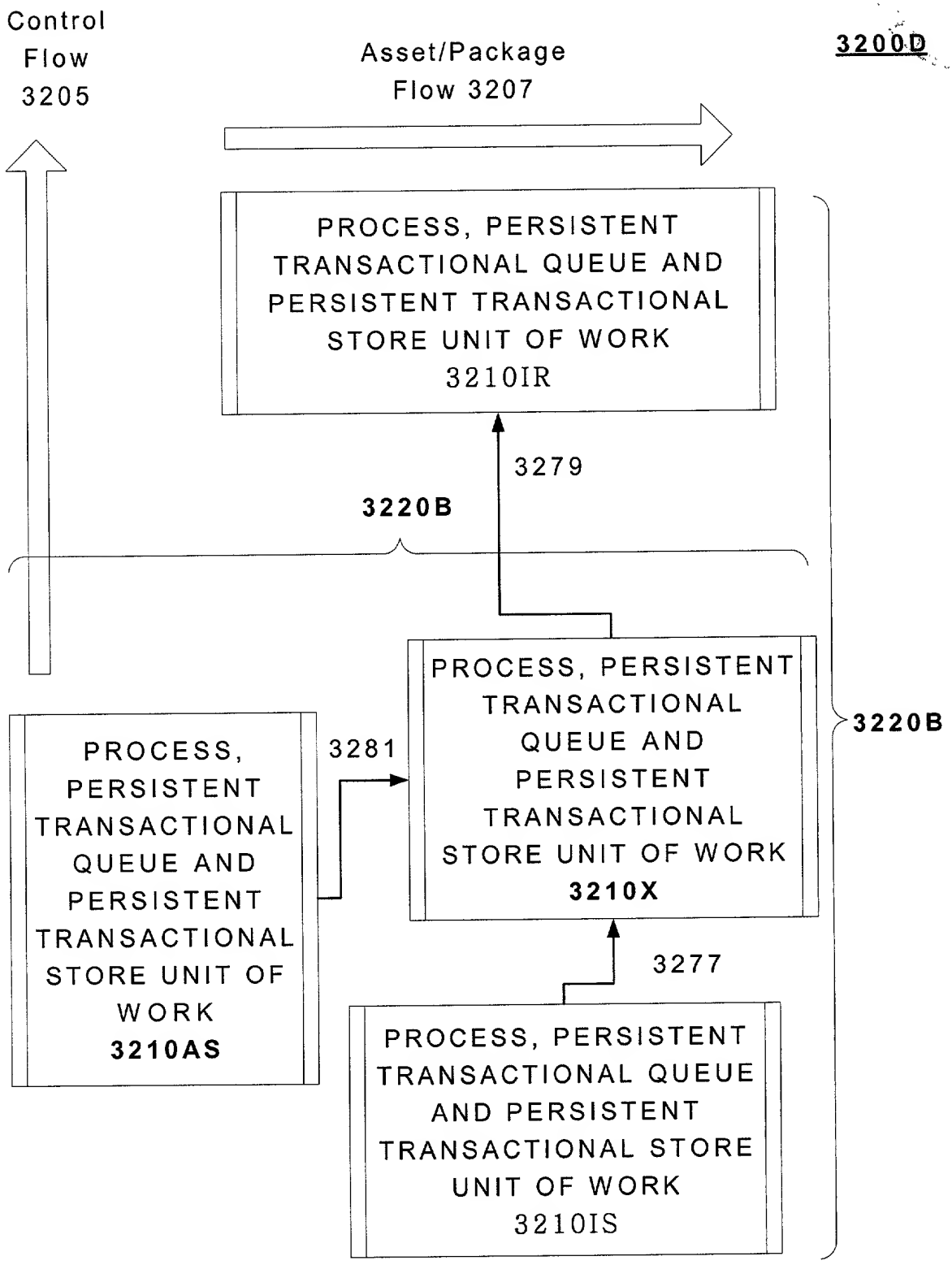

3200D
Control Flow 3205
Asset/Package Flow 3207
PROCESS, PERSISTENT TRANSACTIONAL QUEUE AND PERSISTENT TRANSACTIONAL STORE UNIT OF WORK 3210IR
3279
3220B
PROCESS, PERSISTENT TRANSACTIONAL QUEUE AND PERSISTENT TRANSACTIONAL STORE UNIT OF WORK 3210X
PROCESS, PERSISTENT TRANSACTIONAL QUEUE AND PERSISTENT TRANSACTIONAL STORE UNIT OF WORK 3210AS
3281
3277
PROCESS, PERSISTENT TRANSACTIONAL QUEUE AND PERSISTENT TRANSACTIONAL STORE UNIT OF WORK 3210IS
3220B

FIGURE 32D

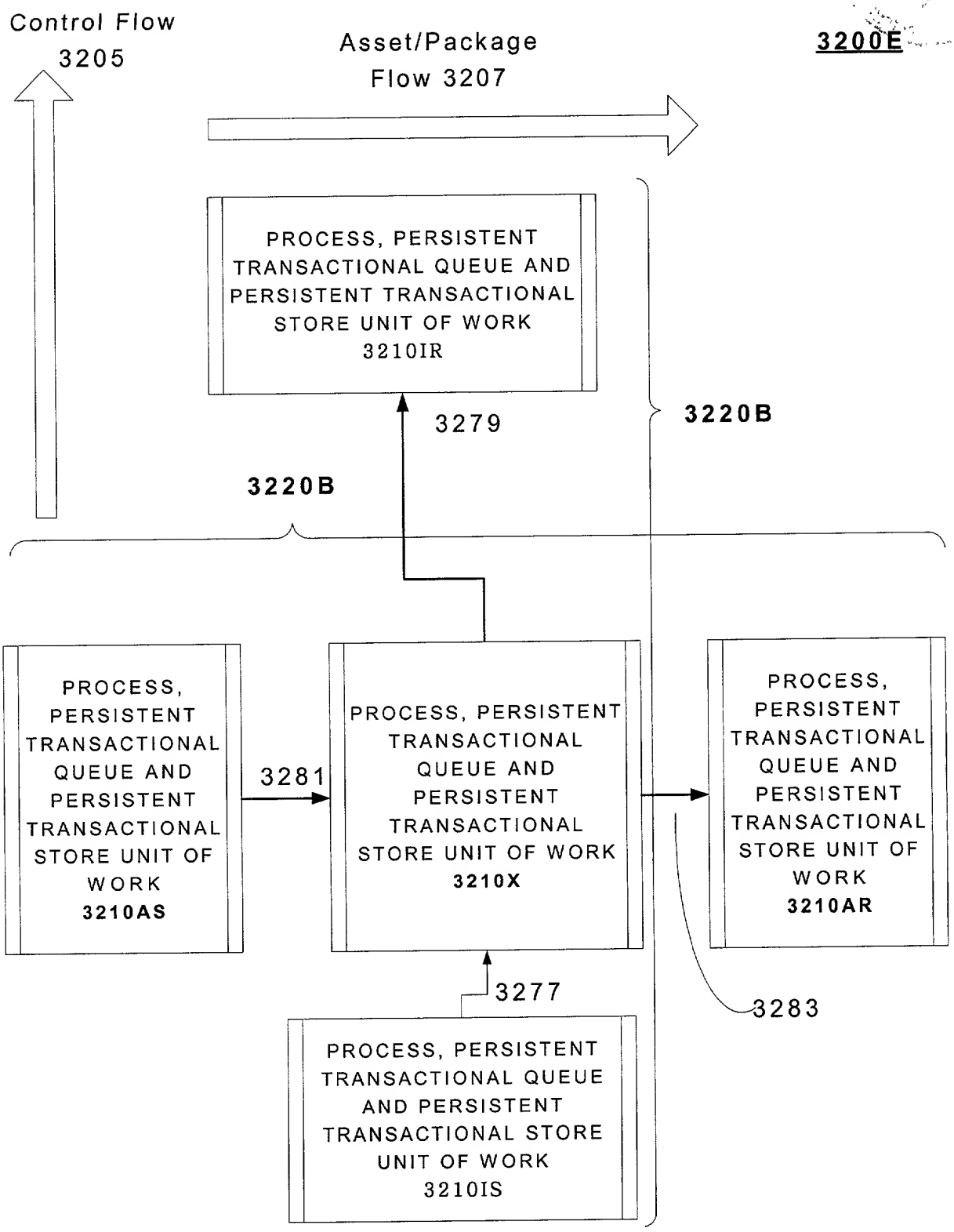

Control Flow
3205
Asset/Package
Flow 3207
3200E
PROCESS, PERSISTENT TRANSACTIONAL QUEUE AND PERSISTENT TRANSACTIONAL STORE UNIT OF WORK
3210IR
3279
3220B
3220B
PROCESS, PERSISTENT TRANSACTIONAL QUEUE AND PERSISTENT TRANSACTIONAL STORE UNIT OF WORK
3210AS
3281
PROCESS, PERSISTENT TRANSACTIONAL QUEUE AND PERSISTENT TRANSACTIONAL STORE UNIT OF WORK
3210X
PROCESS, PERSISTENT TRANSACTIONAL QUEUE AND PERSISTENT TRANSACTIONAL STORE UNIT OF WORK
3210AR
3277
3283
PROCESS, PERSISTENT TRANSACTIONAL QUEUE AND PERSISTENT TRANSACTIONAL STORE UNIT OF WORK
3210IS

FIGURE 32E

3200F

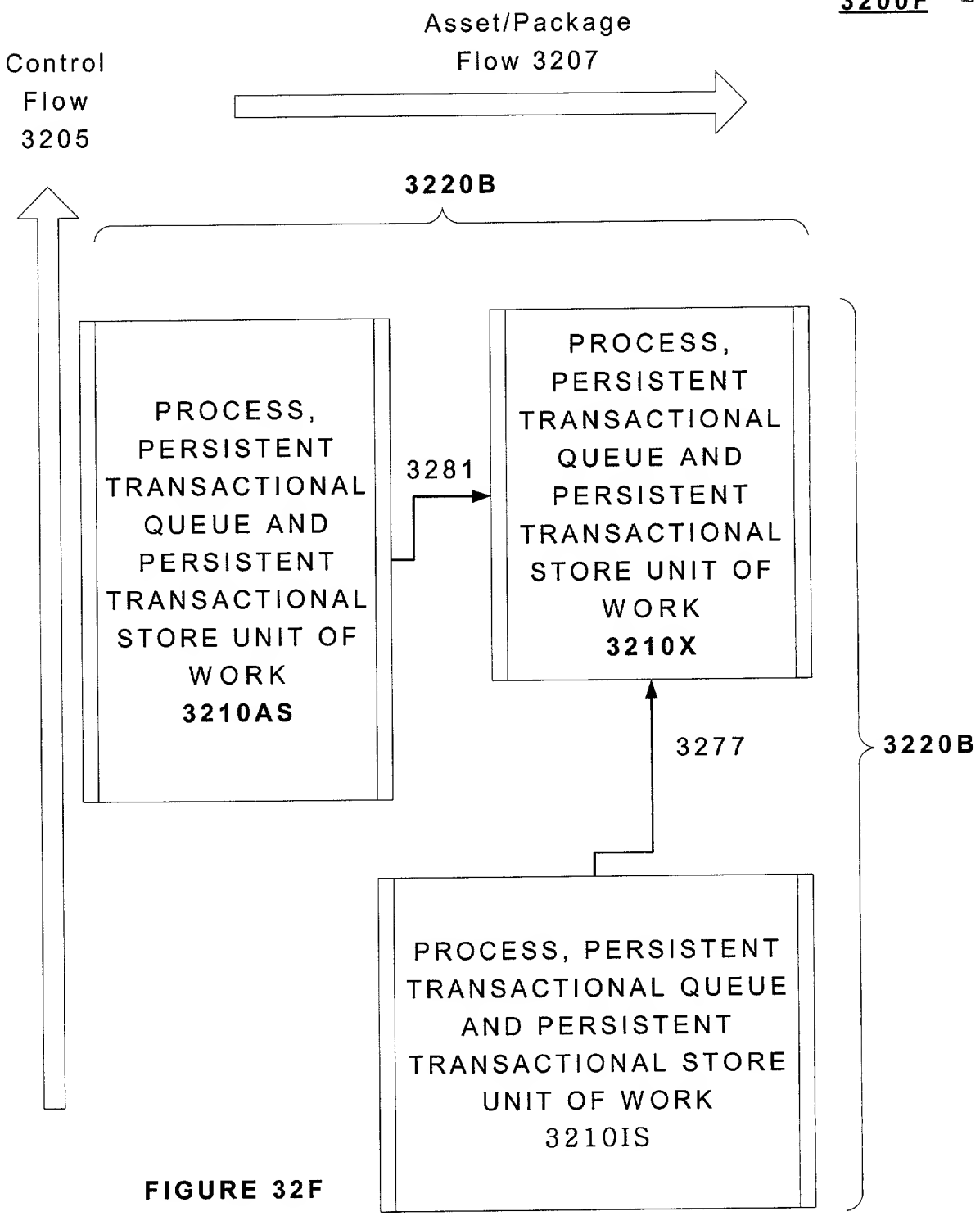


FIGURE 32F

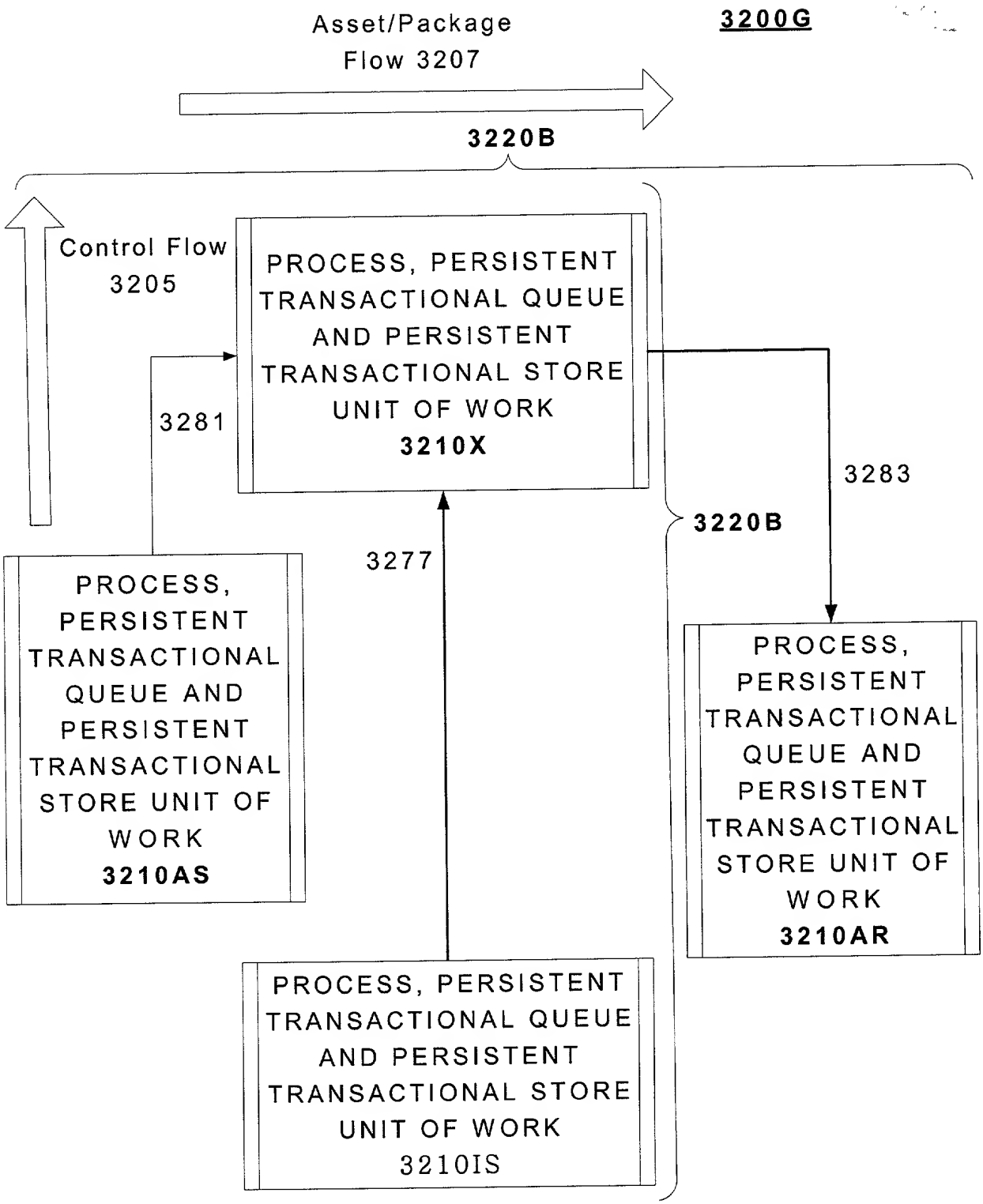

Asset/Package
Flow 3207
3200G
3220B
Control Flow
3205
PROCESS, PERSISTENT TRANSACTIONAL QUEUE AND PERSISTENT TRANSACTIONAL STORE UNIT OF WORK
3210X
3281
3283
3220B
3277
PROCESS, PERSISTENT TRANSACTIONAL QUEUE AND PERSISTENT TRANSACTIONAL STORE UNIT OF WORK
3210AS
PROCESS, PERSISTENT TRANSACTIONAL QUEUE AND PERSISTENT TRANSACTIONAL STORE UNIT OF WORK
3210AR
PROCESS, PERSISTENT TRANSACTIONAL QUEUE AND PERSISTENT TRANSACTIONAL STORE UNIT OF WORK
3210IS

FIGURE 32G

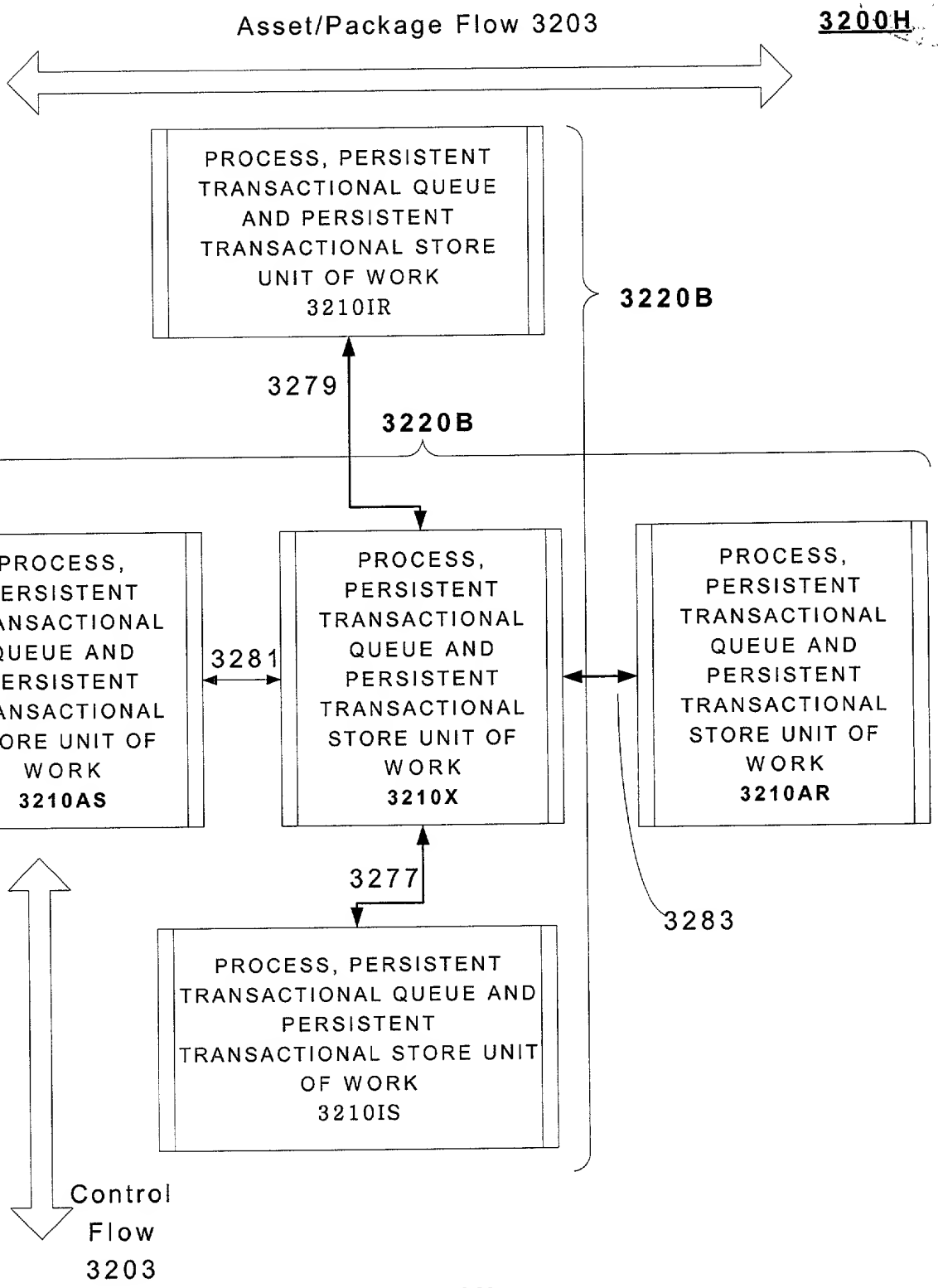

3200H
Asset/Package Flow 3203
PROCESS, PERSISTENT TRANSACTIONAL QUEUE AND PERSISTENT TRANSACTIONAL STORE UNIT OF WORK 3210IR
3220B
3279
3220B
PROCESS, PERSISTENT TRANSACTIONAL QUEUE AND PERSISTENT TRANSACTIONAL STORE UNIT OF WORK 3210AS
3281
PROCESS, PERSISTENT TRANSACTIONAL QUEUE AND PERSISTENT TRANSACTIONAL STORE UNIT OF WORK 3210X
PROCESS, PERSISTENT TRANSACTIONAL QUEUE AND PERSISTENT TRANSACTIONAL STORE UNIT OF WORK 3210AR
3277
3283
PROCESS, PERSISTENT TRANSACTIONAL QUEUE AND PERSISTENT TRANSACTIONAL STORE UNIT OF WORK 3210IS
Control Flow 3203

FIGURE 32H

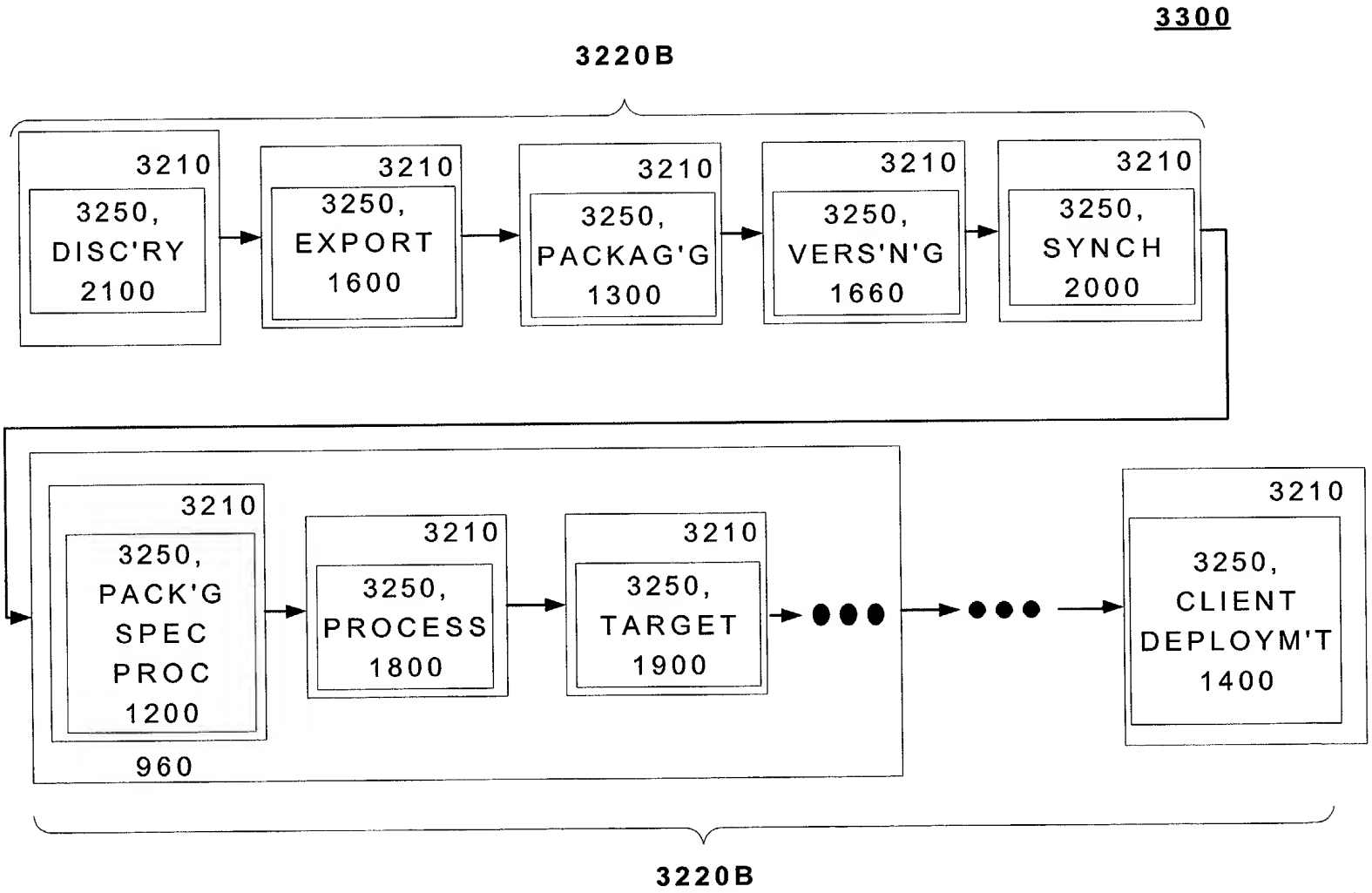
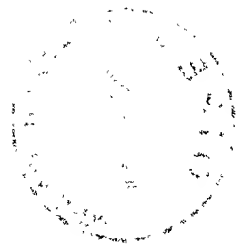

3300
3220B
3210
3250, DISC'RY 2100
3210
3250, EXPORT 1600
3210
3250, PACKAG'G 1300
3210
3250, VERS'N'G 1660
3210
3250, SYNCH 2000
3210
3250, PACK'G SPEC PROC 1200
960
3210
3250, PROCESS 1800
3210
3250, TARGET 1900
3210
3250, CLIENT DEPLOYM'T 1400
3220B

FIGURE 33



3300A

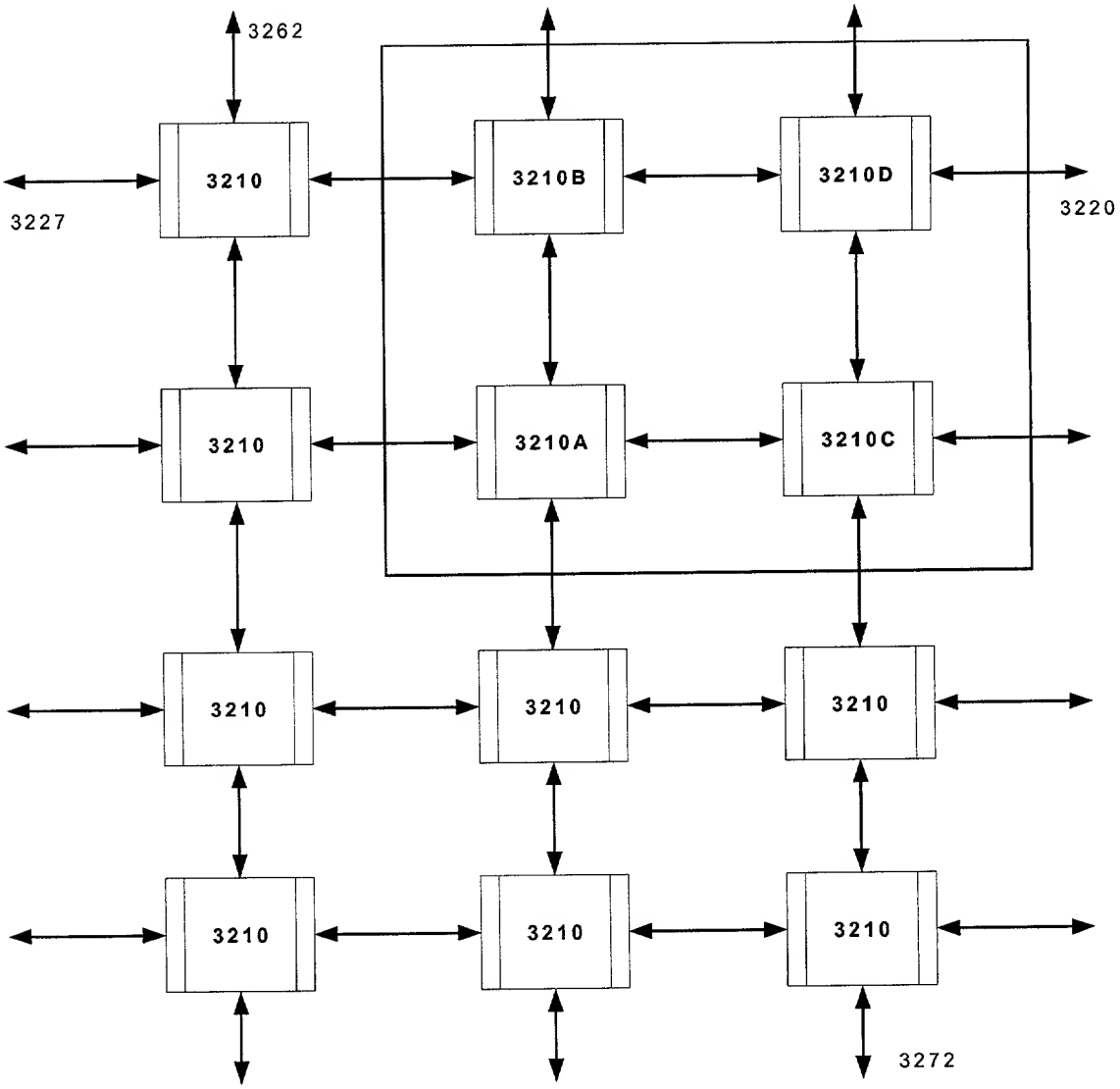


FIGURE 33A

Figure 1 - Collaboration System Configuration

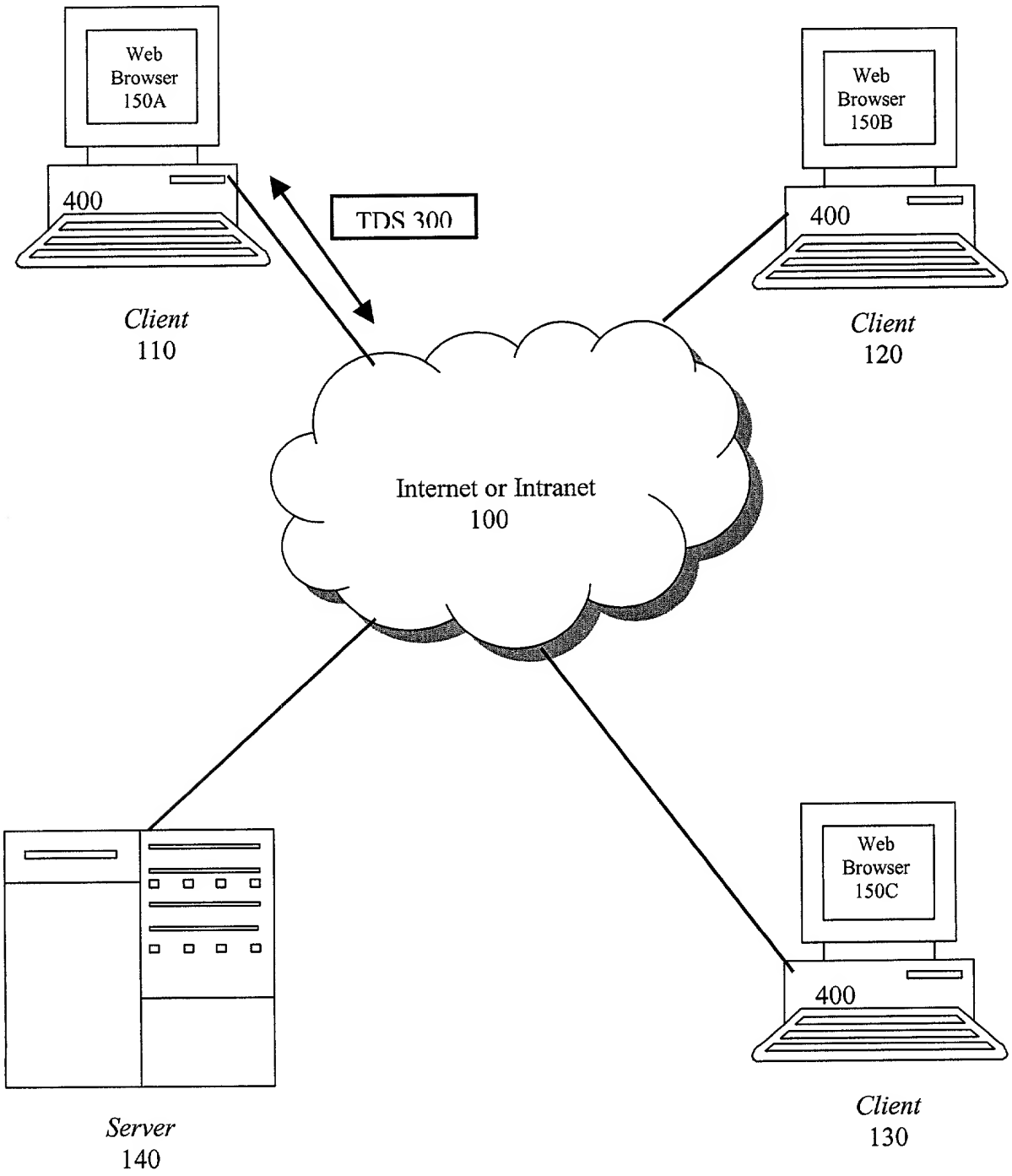


Figure 2A – Window Locator and Document Path

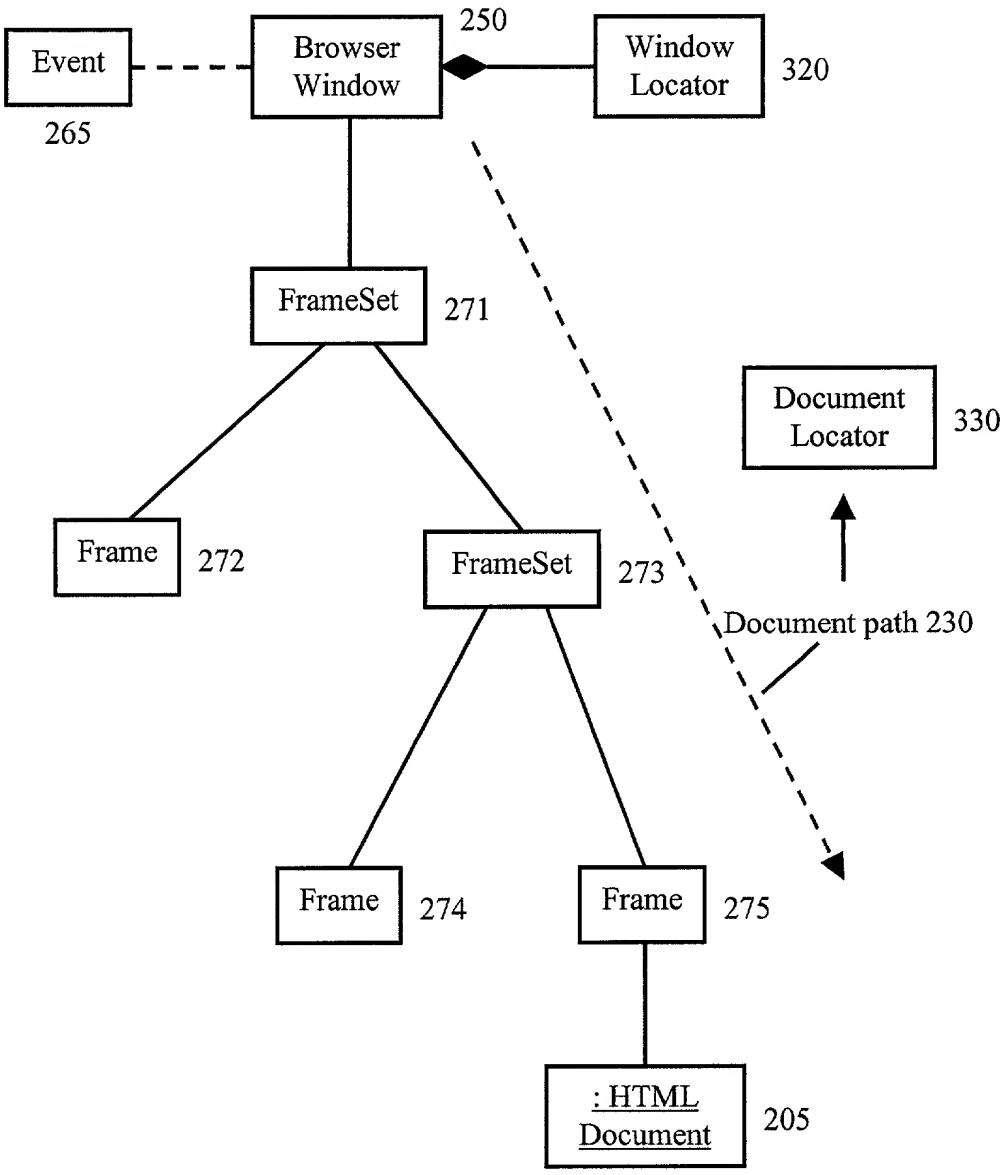


Figure 2B – DOM/DHTML Structure in a Web Browser

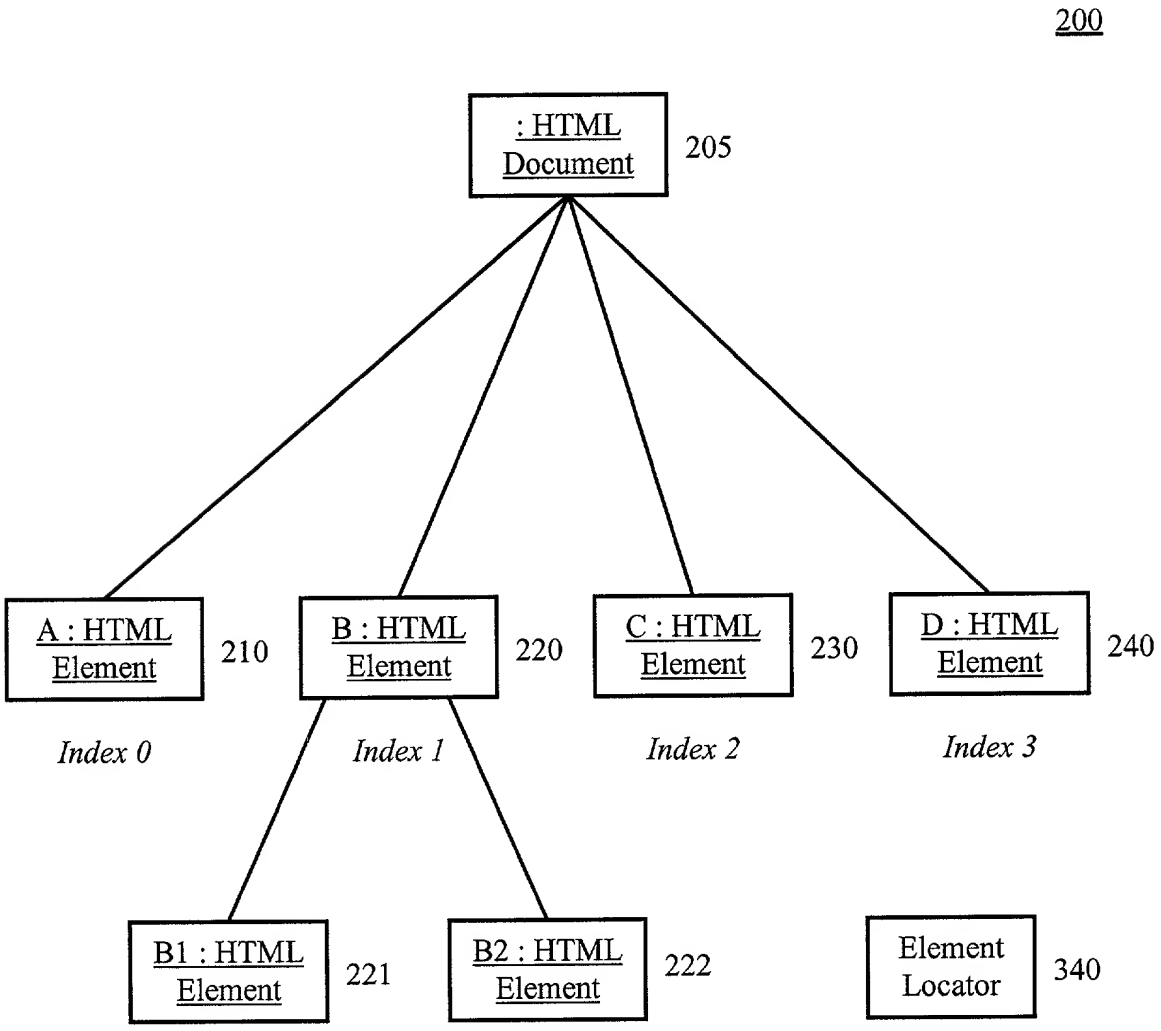


Figure 2C – Element Locator, showing optional mutant web page support

340

Element tagName and index 341	Mutant web page hash value 342

Figure 3 – Transfer Data Structure (TDS)

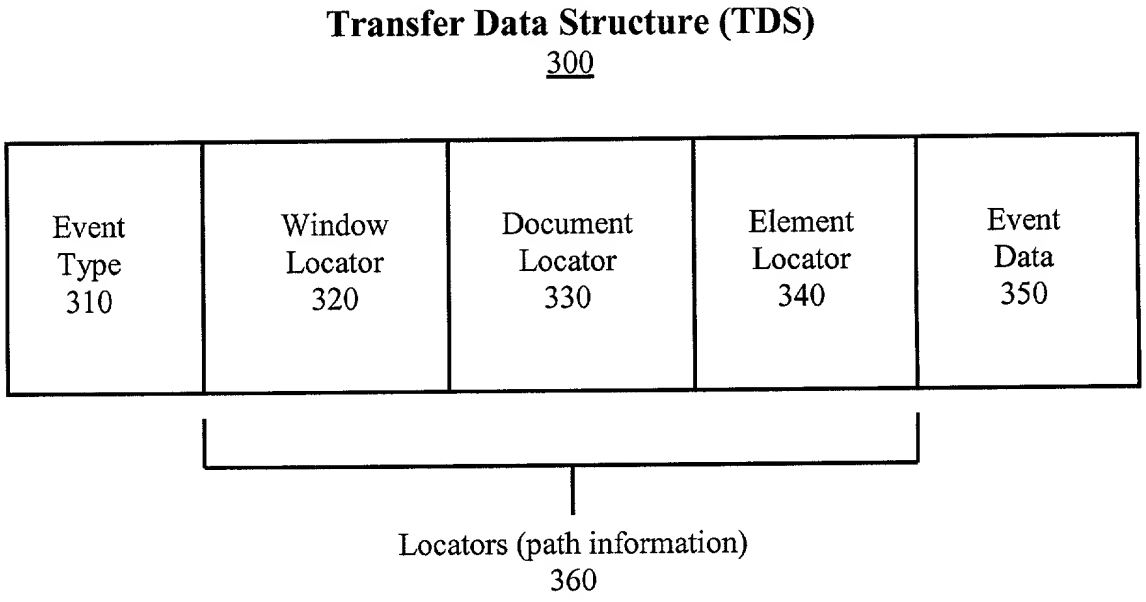


Figure 4 -- Collaboration System Flow

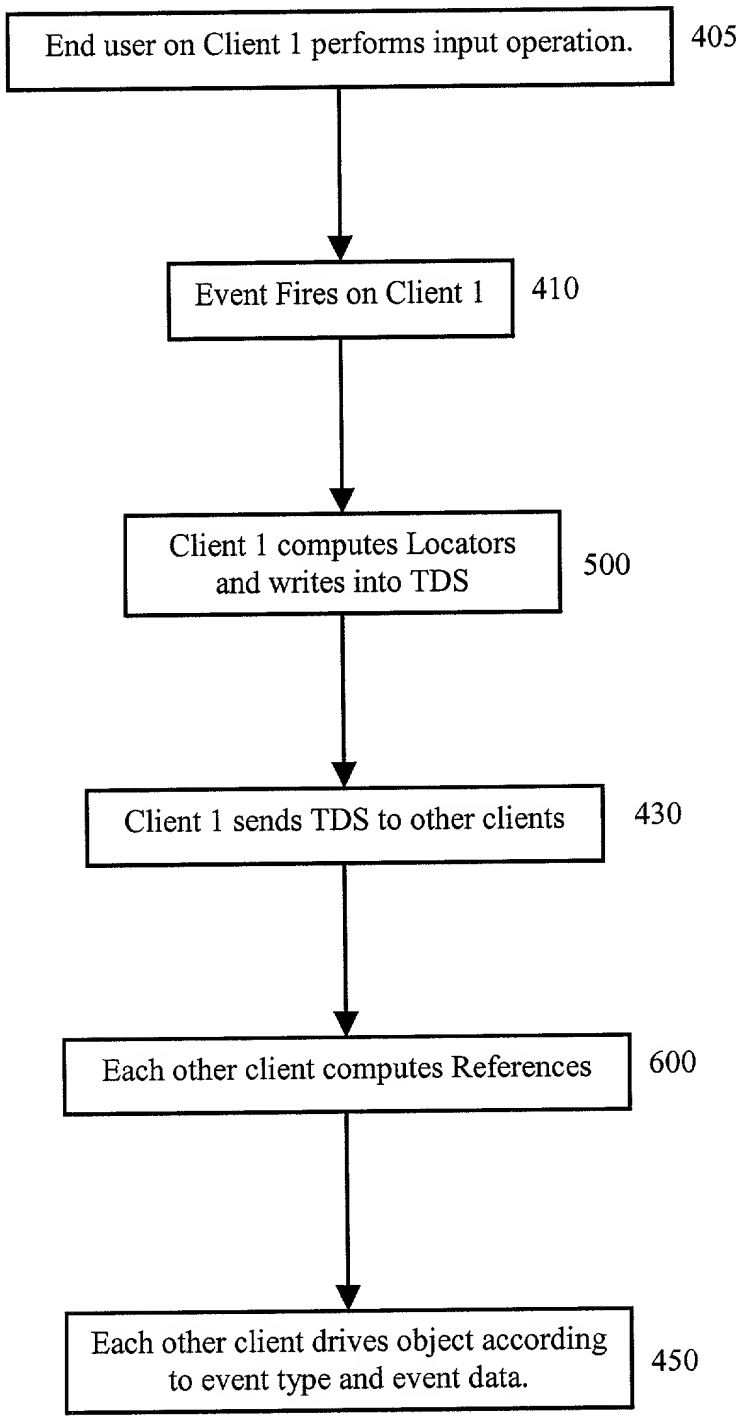


Figure 5 – Computing Locators and Writing into TDS

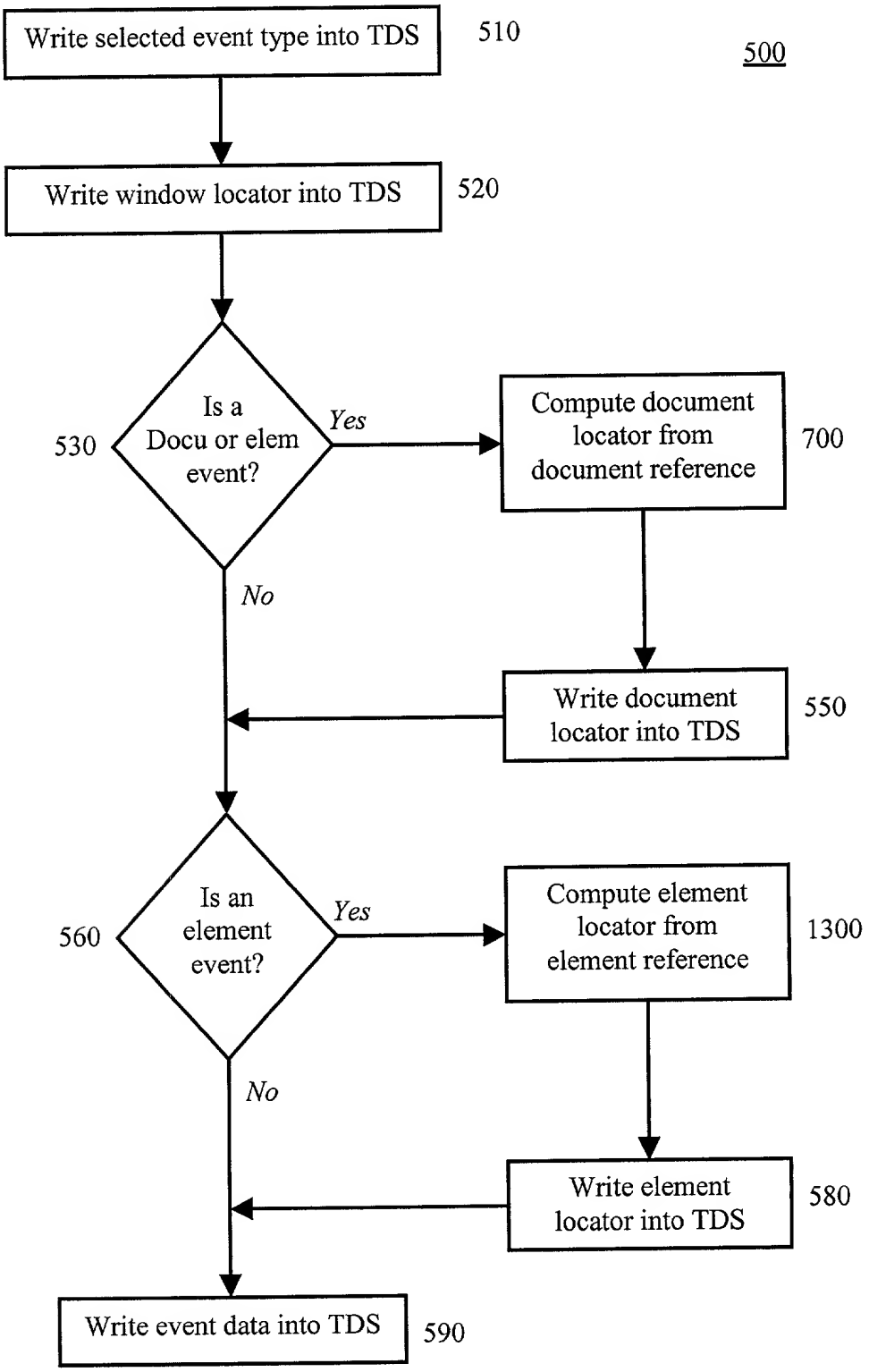


Figure 6 – Computing References

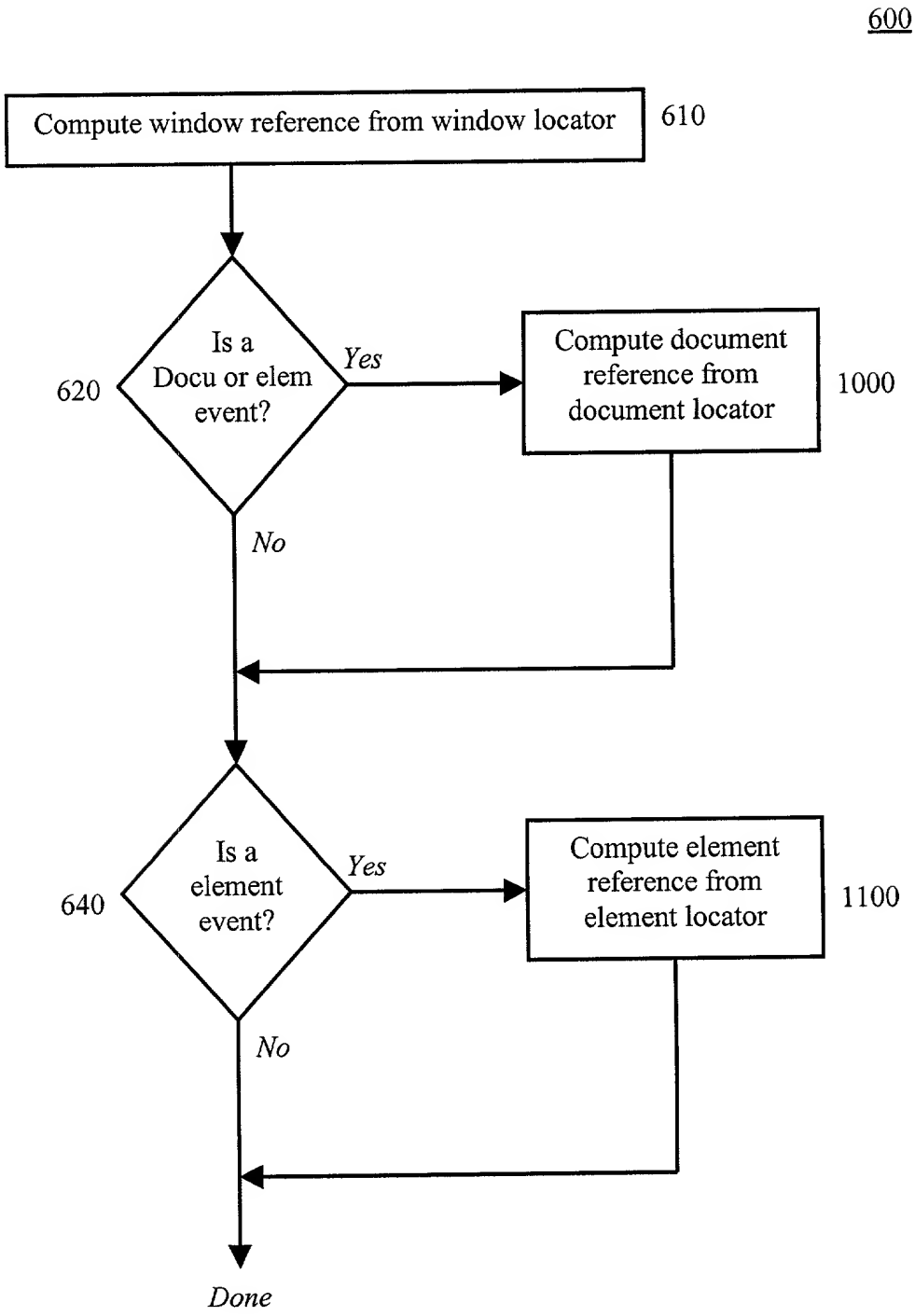


Figure 7 – Compute Document Locator from Document Reference

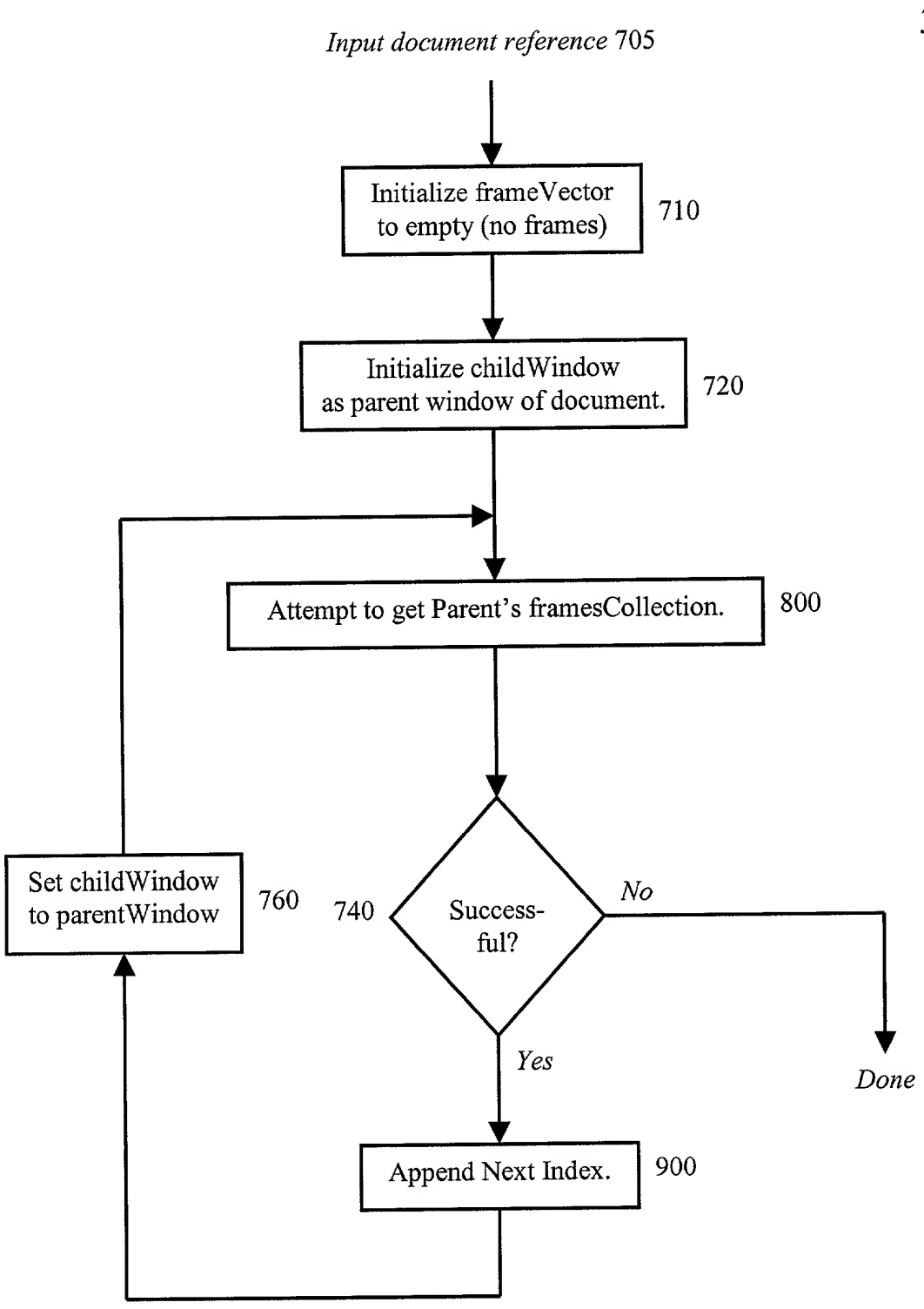


Figure 8 – Attempt to Get Parent's framesCollection

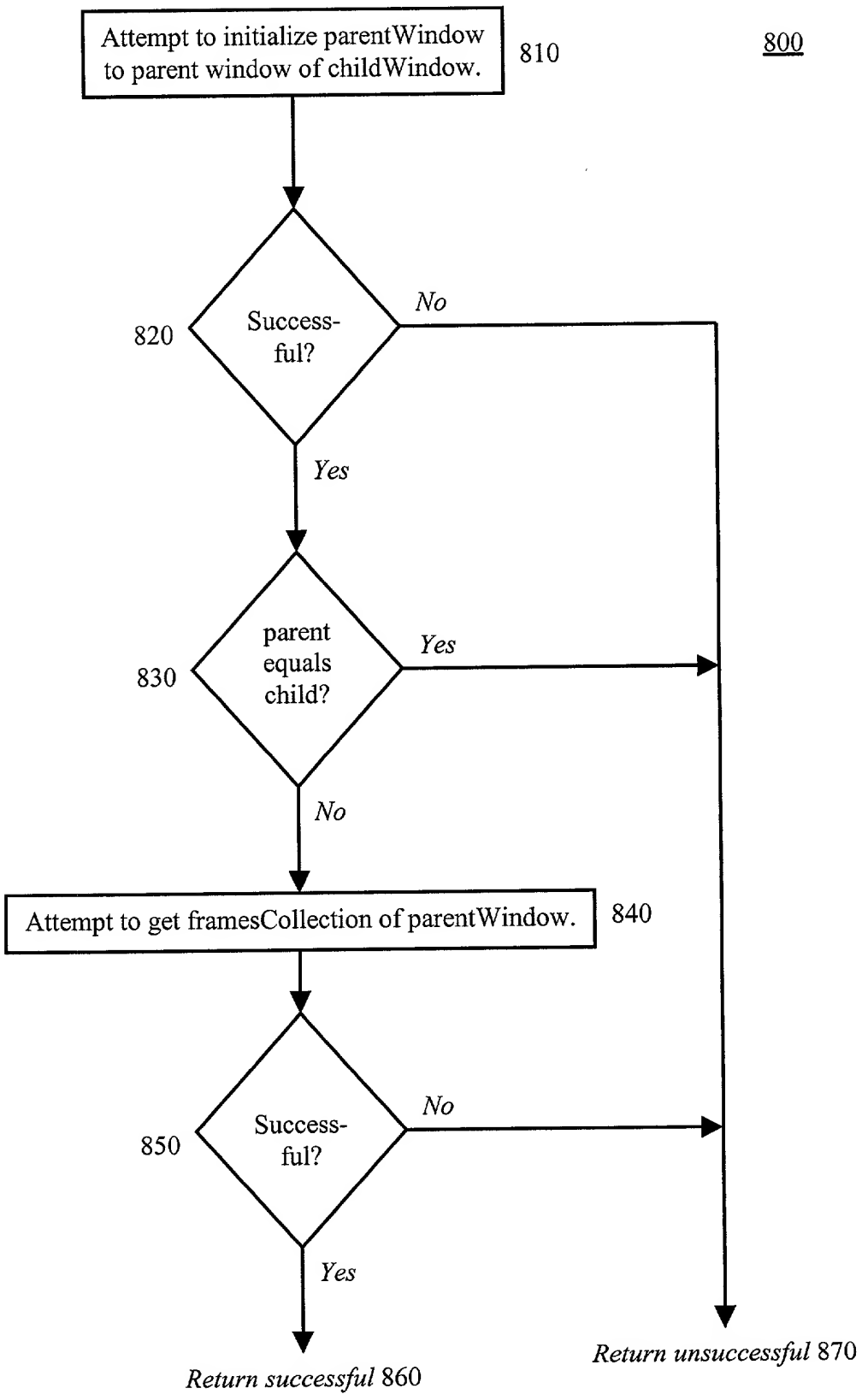
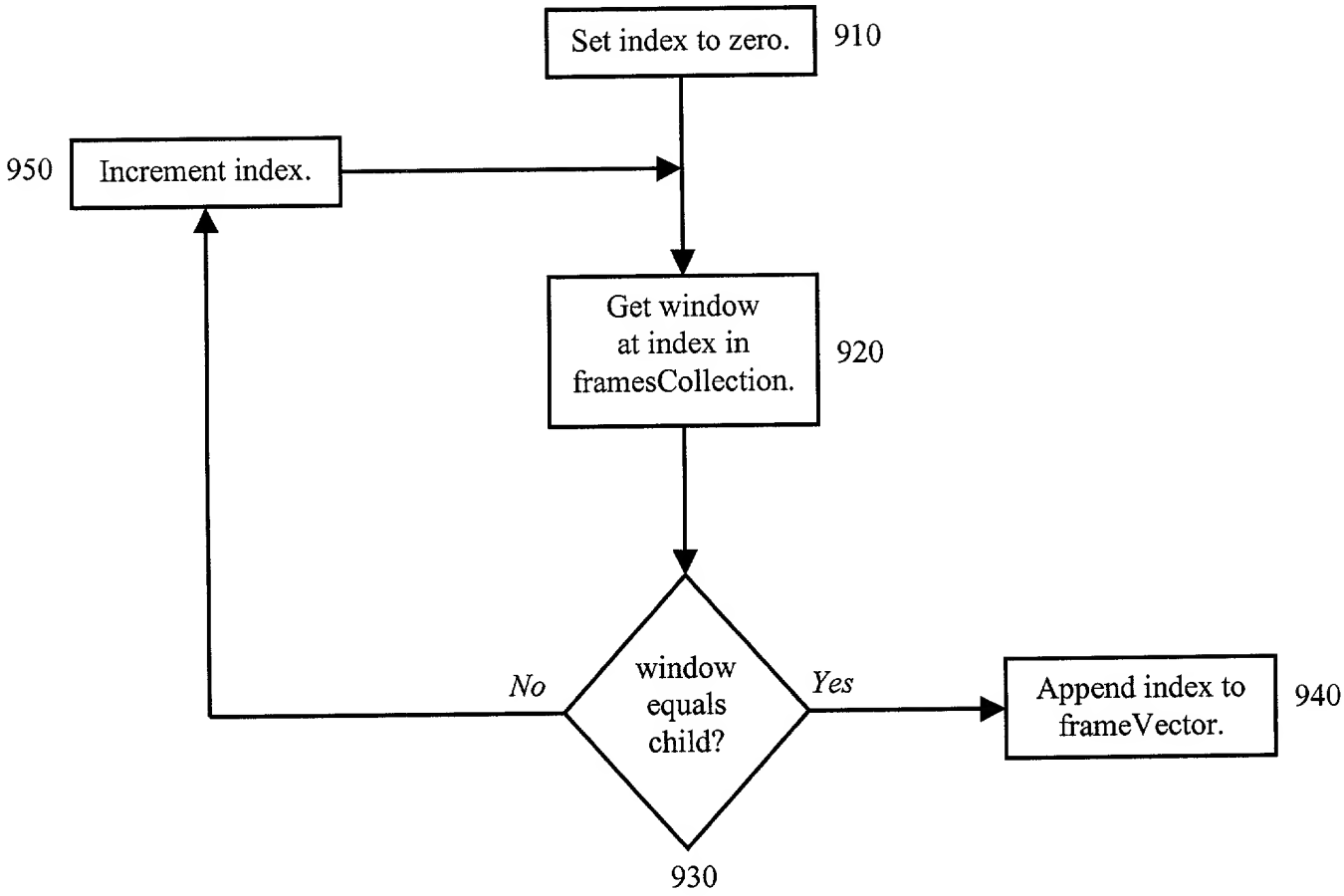
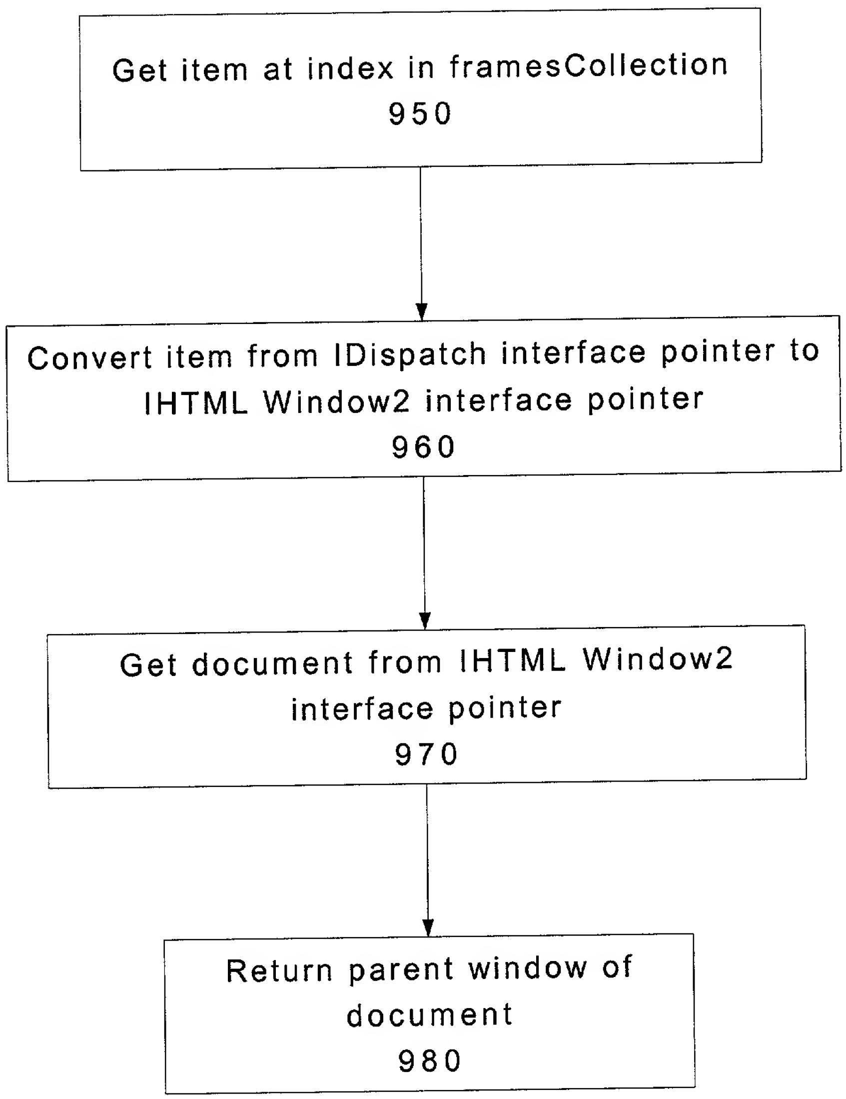


Figure 9A – Append Next Index



One Embodiment Of
920



Compute Window at Index in IE5 FramesCollection

Figure 9B

Figure 10 (Sheet 1 of 2) – Compute Document Reference from Document Locator

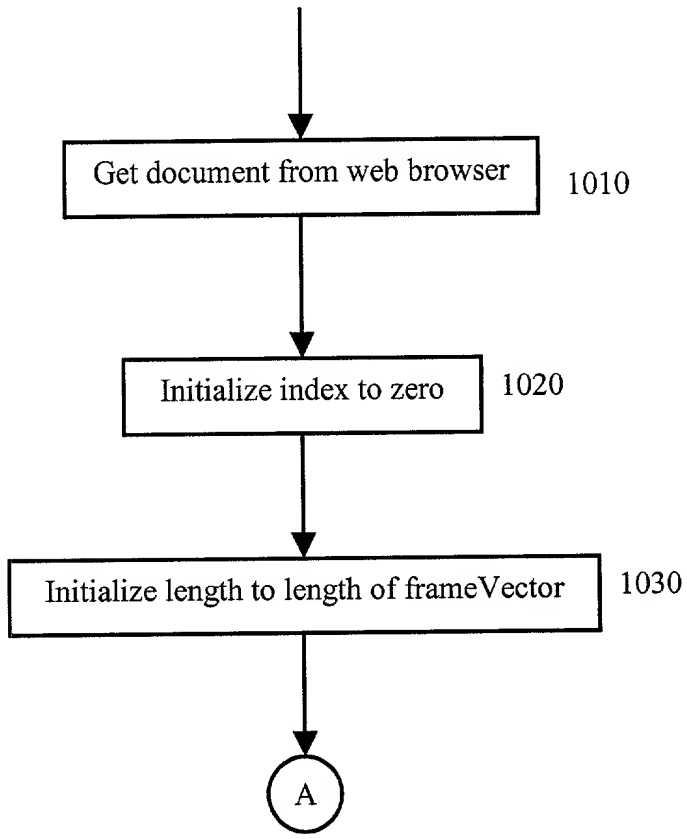


Figure 10 (Sheet 2 of 2)

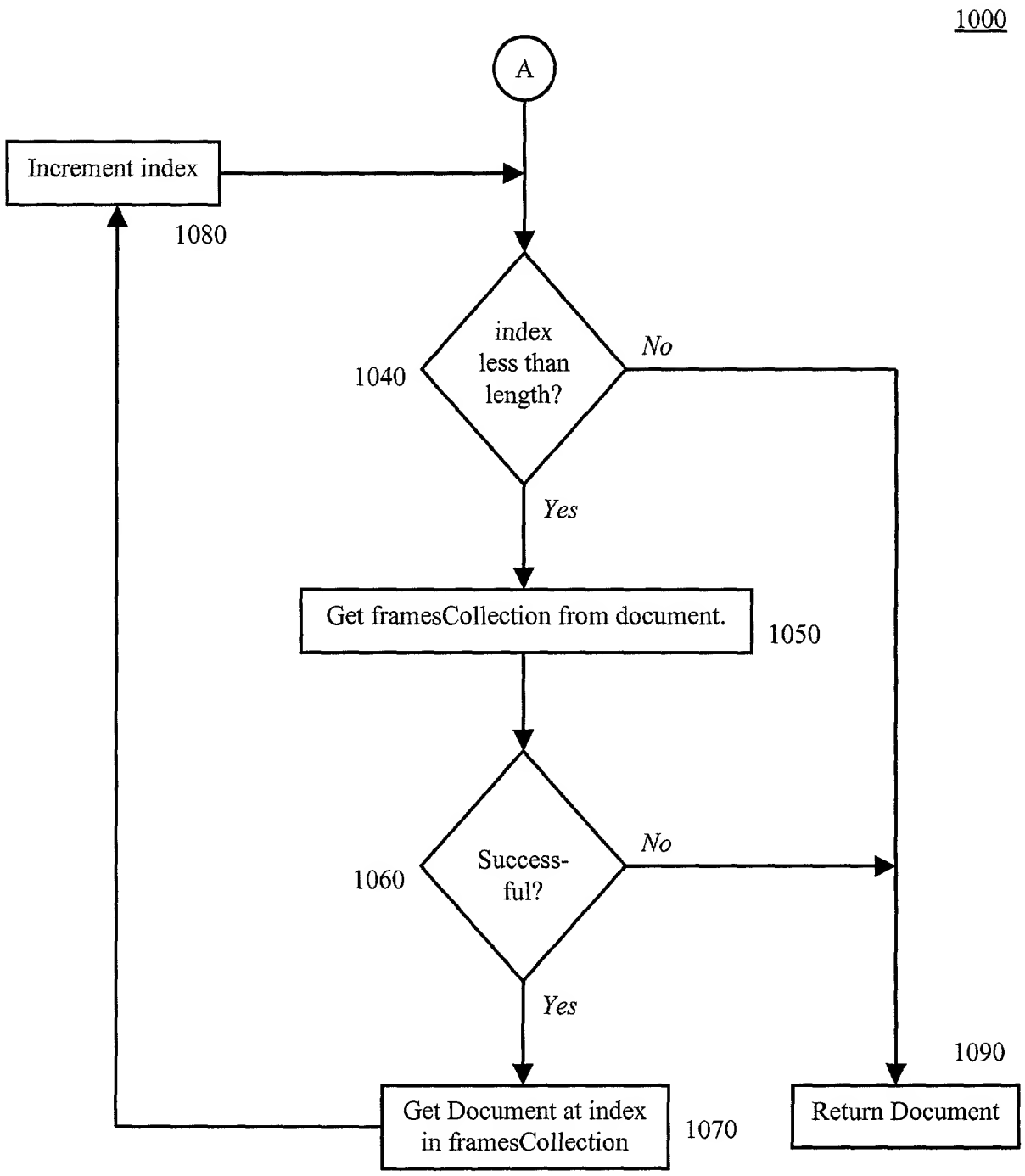
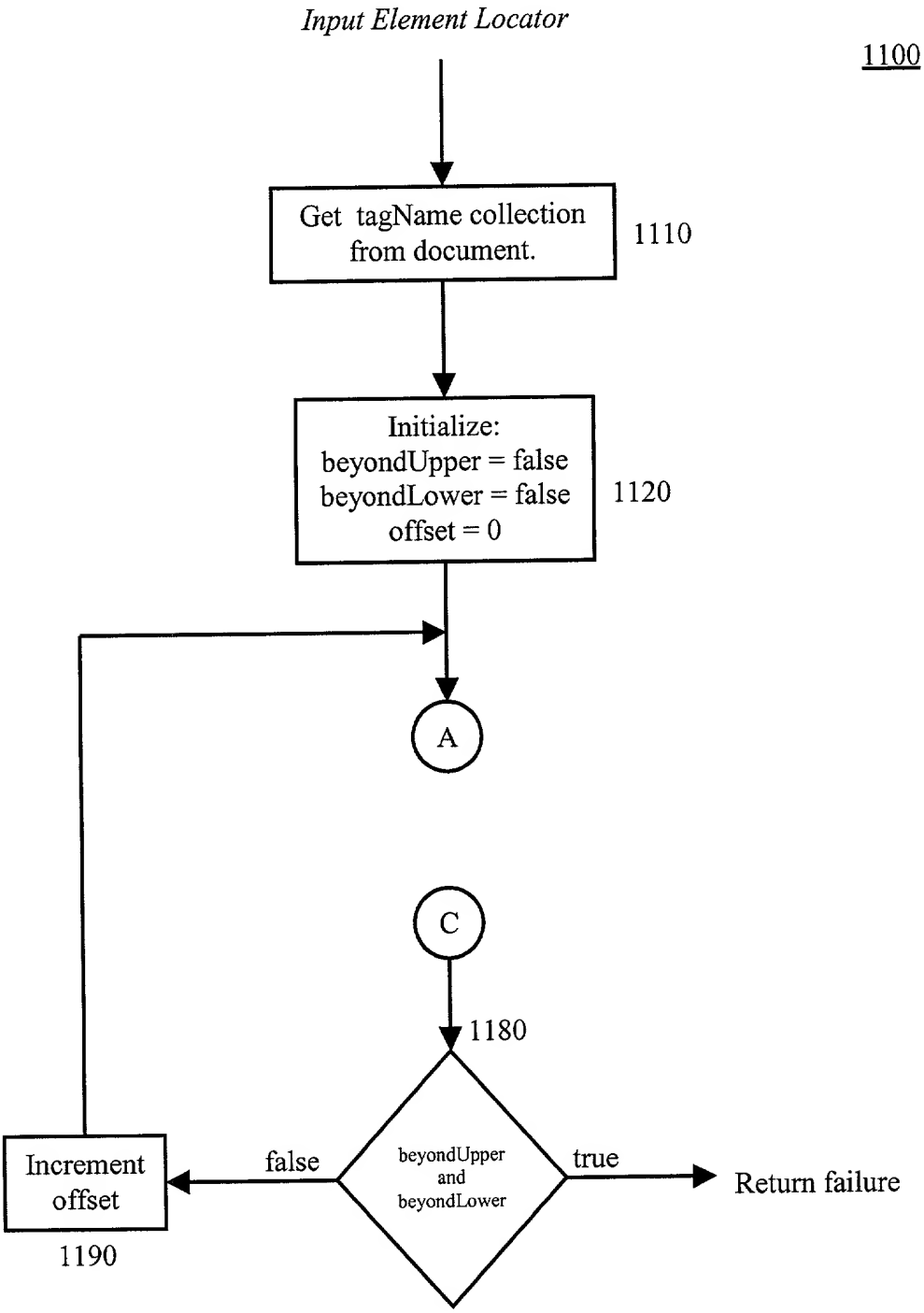


Figure 11 (Sheet 1 of 3) – Compute Element Reference from Element Locator



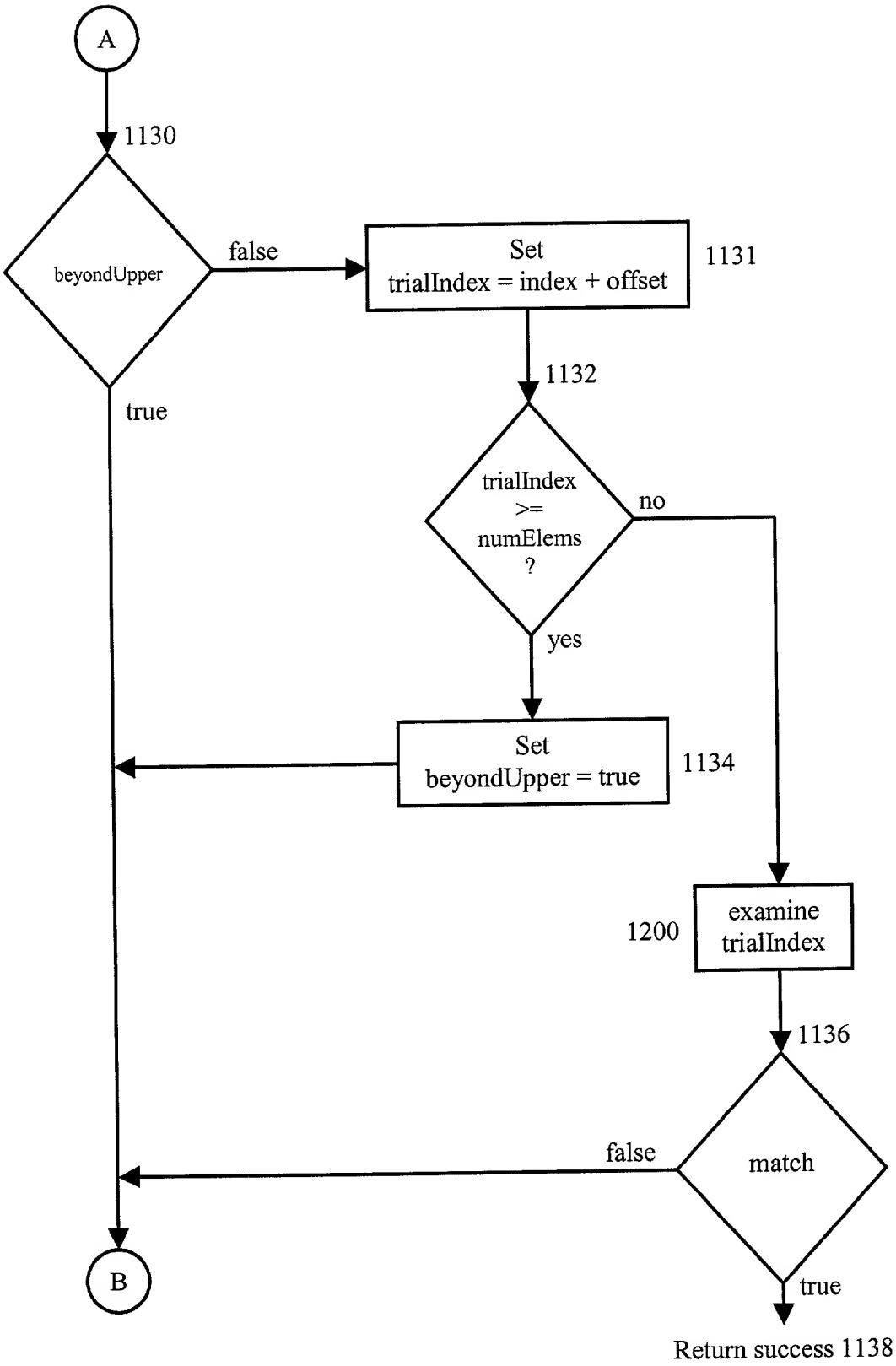


Figure 11 (Sheet 2 of 3)

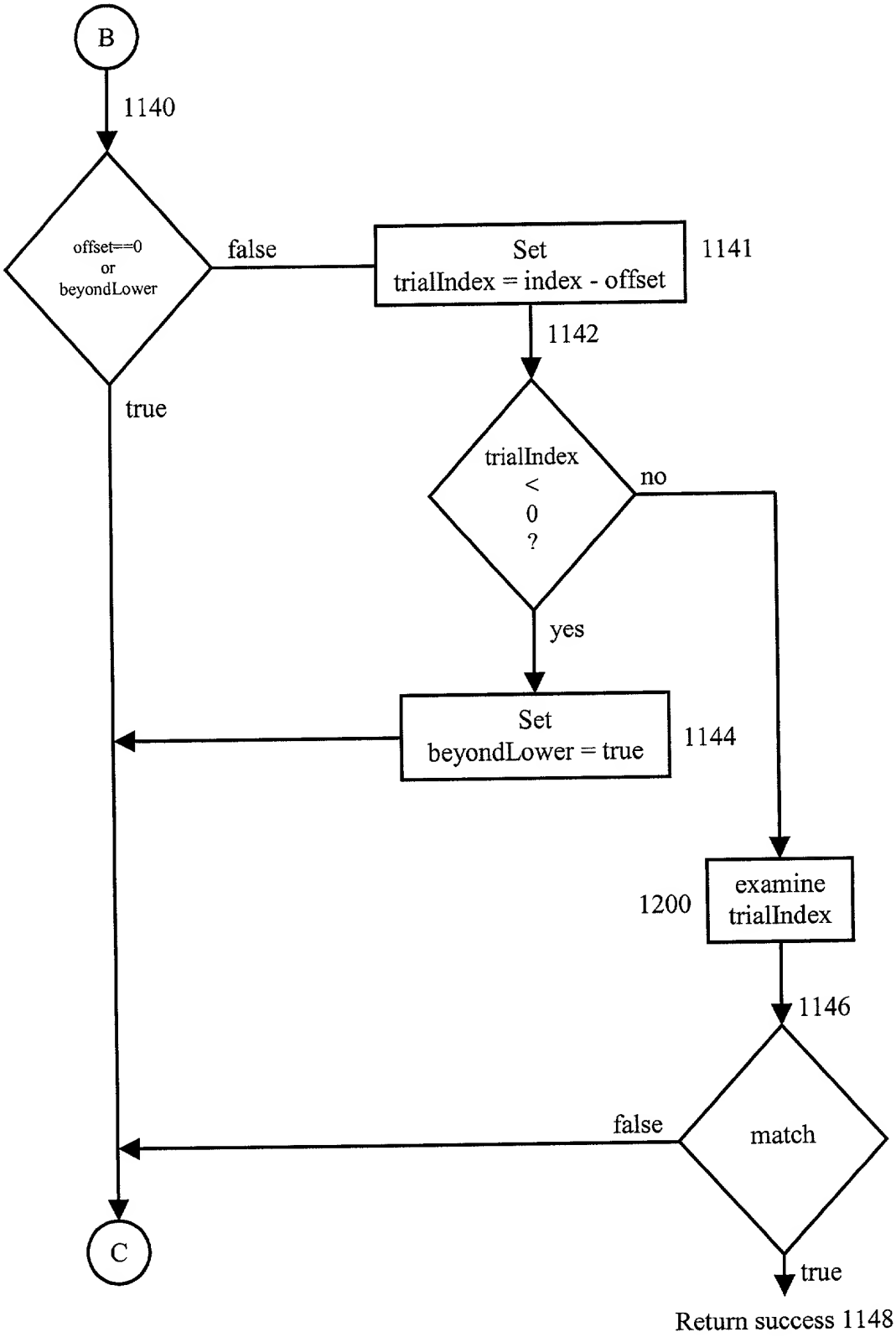


Figure 11 (Sheet 3 of 3)

Figure 12 – Examine trialIndex

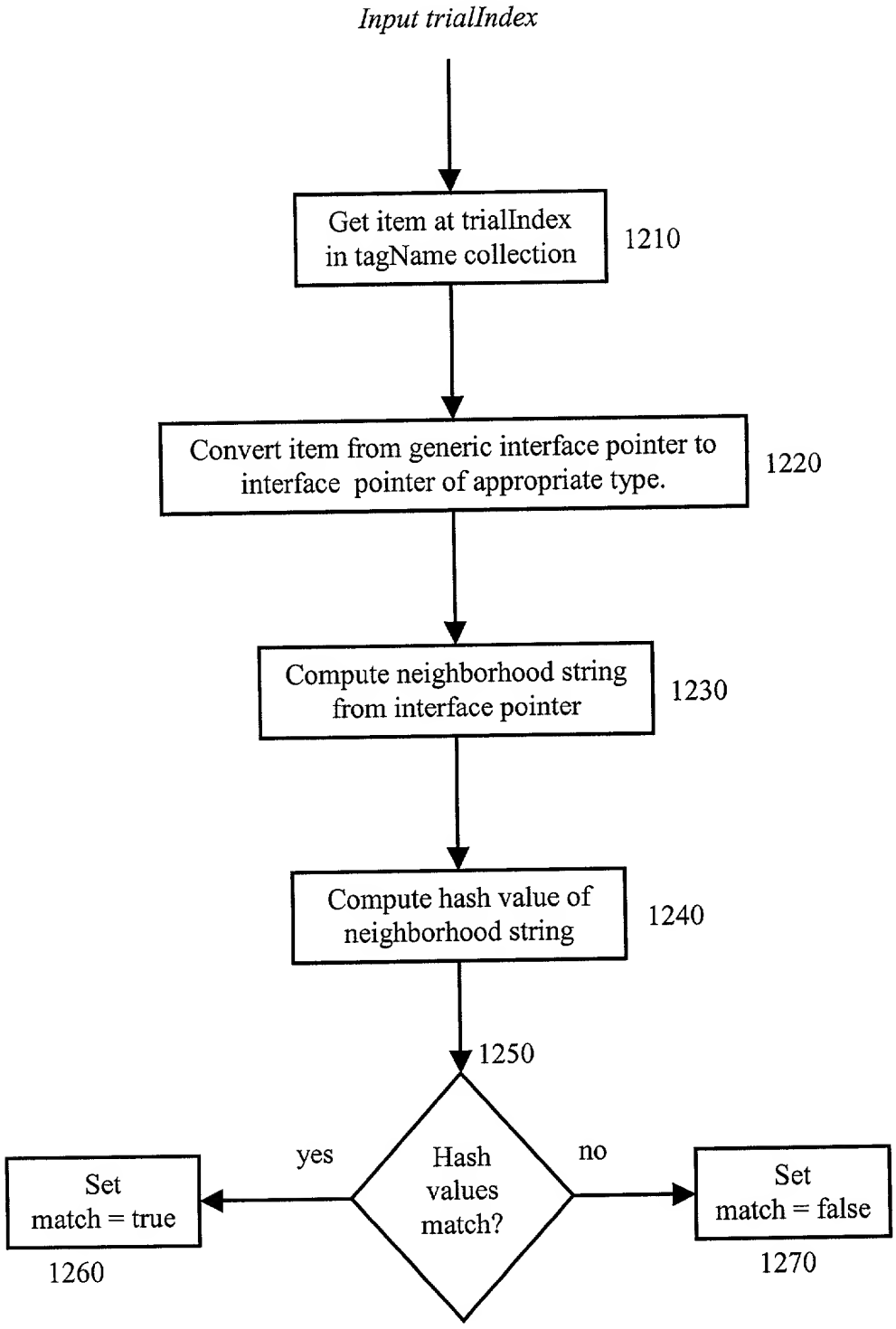


Figure 13 – Compute Element Locator from Element Reference

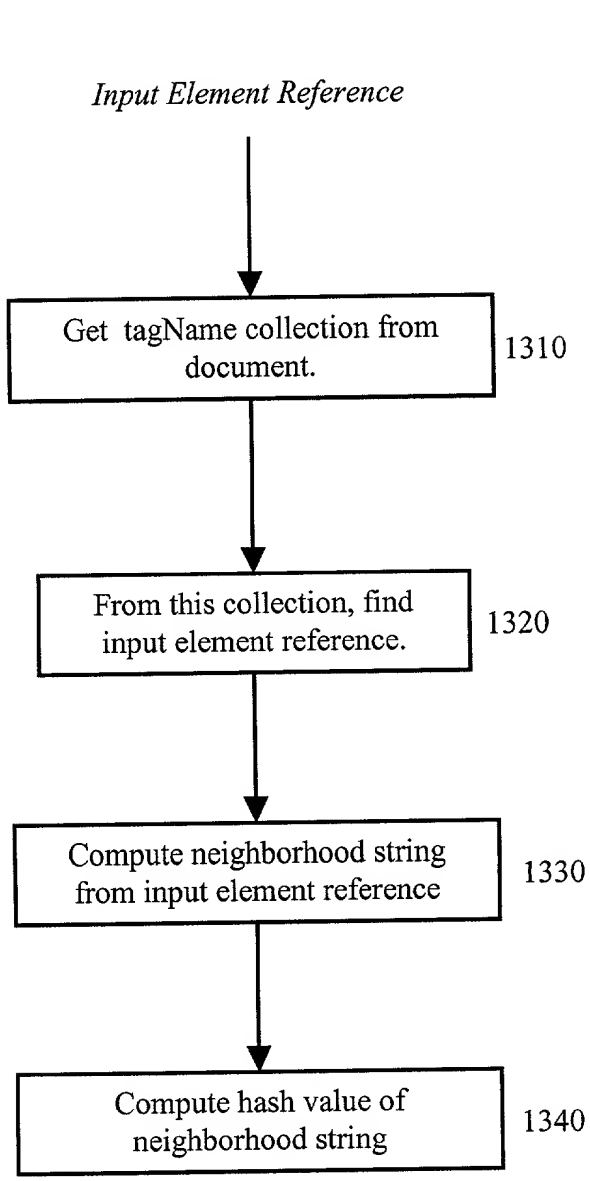


Figure 14 – Virtual Document Stack